

**Maximum break
for Jimmy White's
Snooker?**

***The battle of
the Harriers***

**ISSUE 11
SEPTEMBER 1992**

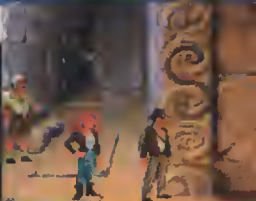
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The famous role model for all AD&D® role-playing fantasies, the dreaded Temple Darkmoon is back.

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Through a clearing in the shadowy forest, a trio of towers rise menacingly into the night sky. You are on the threshold of terror, one wrong move and it's curtains. Finito.

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In fact, you'll only want to stop playing this State-of-the-Art adventure game for one reason. To pinch yourself and prove you're not in the middle of a nightmare.

Available on: PC (EGA, VGA/ MCGA (256 Colour). 640k RAM and Hard disk required. Supports AdLib™, Soundblaster™ and compatibles). Amiga version coming soon.

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LAUGHS FOR PC

Side-splitting pirate adventure

Just when you thought it was the end for LeChuck, he's back.

The legend states that "when LeChuck wants you dead, you're dead" - grim news for his old adversary, young Guybrush Threepwood.



But fear not. Big Whoop holds the key to great power. All is not lost.

In this stunning graphic sequel, young Guybrush's adventures will have you rolling in hysterics. Beware, you'll laugh so hard, milk will flow from your nose.

Behind every pirate is a really gnarly chair and in front of Guybrush is a saga so savage it'll put hairs on your chest.



With 256 colours (PC version), variable difficulty modes, interactive reggae music and "point 'n' click" interface, you'll be transported to Monkey Island in a flash.

So, brace yourself, the fun starts here. Who knows when it will stop?

Available on: Amiga (32 colours) and PC (VGA/ MCGA. Requires 640k Ram AT or compatible. Supports AdLib™, Roland™, Soundblaster™ and SoundMaster™II sound cards. Hard drive required.

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A serious PC experience

U.S. Gold Ltd., Units 2/3, Holford Way, Holford, Birmingham B6 7AX. Tel: 021 625 3366

SPORT FOR PC

Play a round All year round

It's raining cats and dogs outside, but it's a beautiful crisp Spring day on the Torrey Pines Golf Course.

You approach the tee, driver in hand. Gazing down the fairway, you notice every feature of this classic Pacific Ocean Links course.



The Challenge of Golf takes you to a new level of realism. You can almost smell the grass, feel the silky putting surfaces and take in the fresh sea air. At times, you'll want to replace the divots, until you remember it's only a game.



But WOW, what a game!

And now, the 256 colour 3D graphics can be enjoyed on another six championship courses: Bountiful Municipal, Firestone CC South, Bayhill, Pinehurst, Barton Creek and Hyatt Dorado.



So, put on your sun visor and practice your swing. You're next on the tee.

Available on:
PC (VGA or MCGA,
640k and Hard disk
required. Supports:
AdLib™, Soundblaster™,
MSound™ sound cards)

Amiga version coming soon.



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FLIGHT FOR PC

A Simulation to take your breath away

Hard on the tail of Jetfighter I, the mind-blowing combat sequel is airborne.

Jetfighter II: Advanced Tactical Fighter shoots Top Gun down in flames.

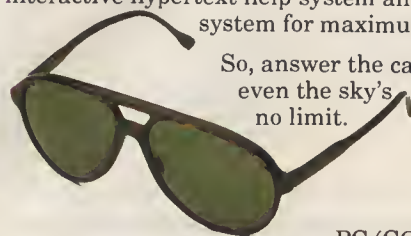


Strap yourself in as the most advanced and powerful 3D technology takes to the skies, with you as pilot whatever the time of day or night.

Revolutionary animation lets you see parachutes opening in the wind, radar chaff blooming behind your jet and feel the landing gear deploy and retract.

Dogfights take on a different dimension with real time artificial intelligence. Includes F/A-18 Hornet, F-16 Falcon and F-14 Tomcat.

Features instant flying mode for beginners, interactive hypertext help system and tunable joystick system for maximum response.



So, answer the call of the wild. Now, even the sky's no limit.

Available on:
PC (CGA/Tandy (4 Colour),
EGA (16 colour) VGA (256 Colour). 640k RAM
required. Supports AdLib™ and Soundblaster™
sound cards. Hard drive recommended.

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A serious PC experience

SCREENSHOTS ARE ONLY INTENDED TO BE ILLUSTRATIVE OF THE GAMEPLAY AND NOT THE SCREEN GRAPHICS WHICH MAY VARY CONSIDERABLY BETWEEN DIFFERENT FORMATS IN QUALITY AND APPEARANCE AND ARE SUBJECT TO THE COMPUTER'S SPECIFICATIONS



PC GAMES COME OF AGE?

We've been banging on for some time now in PC Review about how PC games are improving all the time, the PC being the entertainment platform of the future, depth of gameplay and so on and so forth, but it's usually in terms of

potential – about how they're going to be great as programming expertise develops, prices come down and everybody generally gets their act together.

However, in all eleven issues of PC Review, I can't remember a single month in which we rated games quite so highly as this one. I don't think it's the weather or a communal rush of blood to the head on the part of the reviewers; after all, we pride ourselves on being quite tough markers. I think that we are beginning to see the fruit of publishers using the PC as their 'target' machine, ie, a title is developed first and foremost for the PC, and then converted on to other formats (MicroProse, in this month's On the Spot feature, has quite a bit to say about this subject), and the fact that the large and very diverse PC user base is starting to get the attention it deserves.

Without giving the game away too much (turn to the reviews section and read on for yourself), there are no less than two games rated at nine, and a third at eight, none of them are from the 'traditional' PC RPG or deep strategy genres and only one is a flight sim.

The PC has long been the machine to own if you're a flight sim or RPG buff, but it's good to see other types of game beginning to hold their own. With outfits such as the Bitmap Brothers (see News section) saying that they want to see more arcade-style games on the PC, it's only a matter of time before the PC has as wide-ranging a games catalogue as other leisure computers.

Christina Erskine

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20 CREATIVE MULTIMEDIA UPGRADE KIT

Buying a brand new PC with an integral CD-ROM may not be economically viable, but there are cheaper alternatives. Paul Presley tries out the Creative Multimedia Upgrade Kit and transforms his PC.

28 ON THE SPOT

Nine PC Review readers and flight sim fanatics descended upon MicroProse for a day of demos, discussion and questions and answer sessions. We have a full report of events.

30 THE MUSIC MACHINE

In the second part of his introductory guide to music, Rob Beattie delves deeper into the potential of MIDI, and puts together an effective music starter system around the PC.



COVER DISK

84 DISK 11

If you liked the look of Shadowlands, the new RPG from Domark, when we reviewed it in Issue 9, you'll like this even more – a specially written playable extract from the game, which will give you more than a taste of the gameplay and atmosphere of the full program.

Plus a fully playable demo of Campaign, Empire's World War II tank simulation, and PocketD, a veritable horde of indispensable utilities for the PC.



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92 COMPETITIONS

Two chances for you to win big prizes this month. On page 92, we're giving away two Star colour printers worth nearly £600, while on page 94 you can win the complete set of videos of Thames television's World at War series.

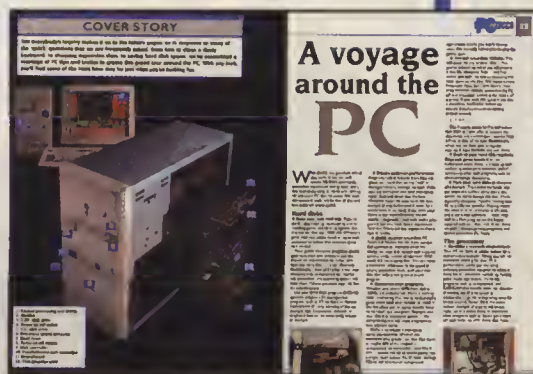


COVER STORY

22 HINTS, TIPS AND TACTICS

Come on a grand tour of the PC, as PC Review gathers up its favourite tips, short-cuts and cautionary tales in a pot-pourri of ideas for the machine.

We've got some tips for getting the best out of your hard disk, some ways to use MS-DOS to your advantage, some dos and don'ts for floppy disks ... there should something useful for everyone here.



REGULARS

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Microsoft aims to win the "hearts and minds" of games players to the Windows interface with a series of Windows-based games, and Amstrad has launched a basic notebook PC.

14 Coming soon

Not one, but two, Harrier simulations are scheduled for launch shortly. We look at the progress so far in both Domark's and

MicroProse's Harrier titles. Plus Geoff Crammond's Grand Prix is finally on its way to the PC.

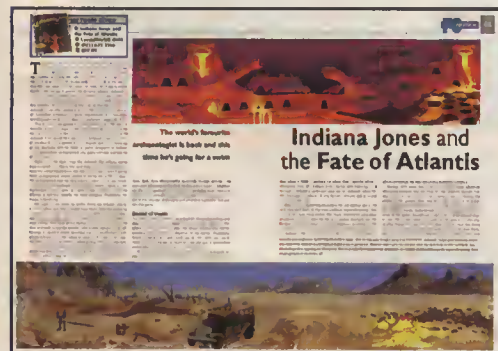
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JOURNEY TO THE HEART OF THE TOLKIEN TRILOGY



The Two Towers™

J.R.R. TOLKIEN'S
LORD OF THE RINGS

VOL II.

The legendary battle of good vs. evil begins anew in "The Two Towers". But this time you delve deeper into the enchanted world of the Middle Earth than ever before.

Take the Ring from Rauros to the edge of Mordor. Every step of the way will bring you face to face with orcs, elves, ents, trolls, ringwraiths and hobbits. Help defeat the forces of evil in return for guidance through mysterious forests, dark swamps and treacherous mountain passes.

To increase the challenge, use the new automapping feature sparingly.

While the new Cliffhanger will test your nerve to the limit, requiring you to control three parties at once, on three suspense-filled missions.

"The Two Towers" features 256 Colour VGA graphics, a complete musical score and digitised effects. And can be played as a game in its own right, or as a sequel.

Interplay

Distributed in Europe by: Electronic Arts, Langley Business Centre, 11-19 Station Road, Langley, Berks SL3 8YN, Tel: 0753 549442, Fax: 0753 546672

*The programme is published with the co-operation of the Tolkien Estate and their publishers, HarperCollins Publishers Ltd. The plot of THE LORD OF THE RINGS, characters of the hobbits, and the other characters from THE LORD OF THE RINGS are copyright © George Allen & Unwin (Publishers) Ltd, 1954, 1955, 1966. ©1992 Interplay Productions. All rights reserved. J.R.R. Tolkien's "Lord of the Rings, Vol II: The Two Towers" is a trademark of Interplay Productions, Inc.

News

GAMES TO OPEN WINDOWS FOR MICROSOFT

In its bid to bring the gospel of Windows to the masses, software giant Microsoft is set to break with its longstanding tradition of producing 'serious' business and productivity software to publish a series of games for the platform.

Although Microsoft has dipped a toe into the murky waters of games development in the past – most notably with the multiple versions of its highly-acclaimed Flight Simulator program – it has always steered clear of becoming too associated with the mainstream games market.

However, the company has recently expanded its games division from two to six people and is expected to make a more serious attempt to win the hearts and minds of PC games players over the next few months.

The first game set to appear in this new push will be Microsoft Golf, an updated version of Access' Links

title, specifically tweaked to make full use of the graphic user interface.

Microsoft's worldwide boss Bill Gates (allegedly America's richest man) is said to be a great believer in games acting as a 'Trojan horse' for bringing Windows into the home.

"Microsoft views the entertainment market as being of strategic importance to expanding Windows outside the business market," he says. "We are already well on the way to getting the platform on to every desk, but we want computers in every home – and what better way to encourage people to use them than to offer excellent entertainment product?"

Microsoft is remaining tightlipped as to exactly what form this 'excellent entertainment product' will take, but we should be able to shed a little more light on the subject in the near future.

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WHO SAID THAT?



Is your keyboard a little sticky? Are you thinking about trading in your dust-clogged mouse for a speedier model? Well, just hold it right there, because you could soon be discarding those old fashioned ways of manipulating your on-screen data and images and replacing them with something you love and cherish – the sound of your own voice. The appropriately titled Talking Computer Company has made this breakthrough possible with the release of the TC1000 Talking Computer (phew – Terminator-speak or what?), a system which allows text and command inputs to be spoken to standard PC software, rather than typed or scanned.

Although the firm's initial marketing will be aimed squarely at the business sector, where it hopes the TC1000 will replace the MD's secretary (although it remains to be seen who'd organise the Christmas party), the possible leisure uses are obvious: Imagine the fun to be had from actually talking to Leisure Suit Larry, or giving spoken orders to each Individual Lemming.

All of these delights may be some way in the future though, as the TC1000 would currently set you back a mere £12,500 – a little out of the range of most gamers' hardware budgets.

But if talking and listening PCs are just so much old hat to you anyhow – how does a multilingual computer arouse your interest? Surrey-based Innovations International is offering the kit to turn your trusty old workhorse into just such a beast for just short of £100.

Essentially a PC-based derivative of the pocket-sized Innovations Interpreter Mk II (as featured alongside the 'sonic mole scarer' in that cute little Innovations catalogue which occasionally falls out of your Sunday paper), the PC Interpreter TP8800 is a speaker and software set-up which allows the user to enter any one of 60,000 phrases or 13,500 individual words (divided into 14 categories) and hear back an accurate translation. The hardware is battery driven and plugs into the parallel port, while the software is mouse and icon driven and supports the speaker's output with on-screen commands and interjections.

Five languages are supported – English, French, German, Italian and Spanish – with the starter package offering the user the choice of any two. Further language modules are available separately at £39.95.

Innovations are on (081) 878 9111, while you can take the risk that the voice on the other end of the phone may not be fully human by calling the Talking Computer Company on (0784) 473737.

INTERPLAY IS SIM-PLY CHUFFED

US development giant Interplay, the team responsible for the Bard's Tale series and Battle Chess, to name but two, is making serious inroads into the multimedia games market with the release of its first CD-based game and an announcement of a tie-up with another major US developer.

The game in question is CD-ROM Battle Chess, an updated version of the firm's classic animated chess game which includes a full tutorial section. The game, which is already available for Commodore's CDTV format, is soon to appear in standard PC CD-ROM and MPC formats.

Interplay has set up a multimedia development studio of 10 people, invested two years of development time and spent over £300,000 on the project – but all of this looks like it's been money well spent, as the investment is cited as a major factor in influencing its recent deal with Maxis, the team responsible for the 'Sim' series.

Under the terms of this new

arrangement, Interplay will develop and publish all three of Maxis' successful strategy and simulation epics, Sim City, SimEarth and SimAnt on all CD formats.

"We're real excited about this deal," says Interplay's Dick Lehrberg. "Maxis has seen the commitment we've made to multimedia and has decided it's what it wants. We're dead chuffed!"

Despite this flurry of excitement, it's unlikely that any of the three sims will appear within the next 18 months. In the meantime, an announcement is expected soon with regards to Interplay's European presence.

At present, the firm distributes its floppy disk-based titles through Electronic Arts – and this situation is unlikely to change – however it's thought that Interplay will soon set up its own office to handle the sales and distribution of all its CD- and cartridge-based games on this side of the Atlantic. More on this next month.



IT'S SHOWTIME!

Channel 4's computer games programme, Gamesmaster, is all set to leap from your screens and enter the real world this December, when the first ever Gamesmaster Live exhibition takes place at Birmingham's NEC.

Although details are understandably few and far between, with the show still so far in the future, it's thought that it will be similar in style to the Clothes Show Live affairs which have taken place at the same venue for the last few years – that is, it will be as much a live event as a standard exhibition.

What is known is that Gamesmaster Live will stretch out over three halls of the massive NEC complex and will take place between December 4th and 6th.

The event is being organised by Bedford-based Xponent, and is being fully backed by both Gamesmaster and EMAP Images (the company which publishes PC Review). The organisers promise a 'major presence' from leading PC manufacturers and software publishers. Expect more news over the next few issues.

CIRCLES IN THE SAND

With the Gulf War now little more than a distant memory – and already appearing in the latest editions of school history text books – war game specialist TSR can hardly be accused of cashing in with the announcement of A Line In The Sand, a strategic recreation of that very conflict.

Designed for up to six players (all of which can be taken over by the computer, if you're the type of person who likes to watch machines playing with themselves), ALITS incorporates diplomatic and military decision-making in six separate scenarios – two factual and four hypothetical.

Each scenario has its own optional rules and weapons, with the latter including air, land, sea, nuclear and even chemical armaments. At its most basic level, the game is designed to be played in less than two hours, although with all of the complexities incorporated you can count on setting up to six hours aside to see off Saddam.

A Line In The Sand will make its first forays into your local shop late next month. Further reconnaissance can be made by calling TSR's UK distributor US Gold on (021) 625 3366.

IN BRIEF

SENSIBLE FOOTWORK

● The original development team behind Sensible Soccer has now started work on the PC version, which is reputed to be well on

course for a release in January 1993.

Published on the Renegade label, Sensible Soccer bolsters its obvious arcade-style attractions with a number of management and strategy options and a whole host of built-in teams for the player to choose from.

"The PC has well and truly emerged as a significant entertainment vehicle, not only in the UK but throughout Europe," says Renegade supremo Tom Watson. "Bearing that word 'entertainment' in mind, it's our

intention to bring some high quality action

to the platform, rather than the passive and boring American strategy nonsense which is currently seen as the only 'true' IBM software."

Renegade games are distributed by Mindscape (one of the producers of non-boring American software perhaps?), who can be contacted on (0444) 246333.

PASCAL TODAY

Those of you who are equipped with a video recorder and the burning desire to learn how to program in Turbo Pascal will be bowled over by Borland's release of the tongue-trippingly titled Learn Programming Today With Turbo Pascal.

Described as 'an absolute must' for budding programmers, the package retails at £79.95 (exclusive of carriage and VAT) and includes Turbo Pascal version 6, a VHS video tape and a comprehensive workbook.

For further details call (0734) 321150 - now!

ON HOW TO USE PSION

Owners of the all-singing, all-dancing Psion Series 3 might soon be able to work out how to use the darned thing, thanks to Kuma's latest publishing venture, the Introduction to Using the Psion Series 3.

This, Kuma's (would you believe?) third book dedicated to the Series 3 claims to dispense with "all the computer jargon and technical waffle and concentrates on the machine's abilities and potential as your own, private, personal assistant."

The jargon and waffle referred to presumably comes from Psion's own documentation.

This obviously invaluable tool is available now, priced at £14.95. Details on this and the other 60 titles in Kuma's range can be found on (0734) 844335.

AMSTRAD TAKES QUICK NOTES

Profits aren't the only things which are getting smaller at Amstrad these days, as, following a relatively quiet two-year period, the Brentford boys are about to make another huge splash in the home PC market with the launch of its NC100 Notepad computer.

Priced extremely competitively at £199.99 (inclusive of VAT), the machine is A4-sized and incorporates a word processing package, spell checker, calendar/diary, address book, world time clock (with multiple alarms), calculator, BBC BASIC (all held on ROM chips) and extensive printer compatibility.

The machine's launch is to be backed up in the autumn by a £3 million advertising campaign with the catchline "If you can't use an Amstrad Notepad in just five minutes, you'll get your money back." The company which pioneered the PC's entry into the home with its 1512 and 1640 machines hopes once again to appeal to the 80 per cent of the population which does not own or cannot use a computer.

Obviously happy with the current state of the Tottenham team, Amstrad's chairman Alan Sugar is alleged to have personally overseen the machine's development. He comments: "The computer industry has brilliantly exploited technical breakthroughs over the last 10 years so that today consumers have massive computing power at their disposal, but at the same time are confronted by formidable learning obstacles. This is not a problem for those who are computer literate, but it is a nightmare for the 80 per cent of the population who are not, and have no time to learn."

The new machine features a full Owerty keyboard and an 80 character by eight-line 'supertwist' LCD display. Running on four standard A4 batteries (allowing up to 40 hours use) and runs at a fairly sluggish 6Mhz. The Notepad is fitted with a PCMCIA card slot (allowing the use of credit card-sized 'smart cards') and both serial and parallel ports, but strangely excludes a floppy disk drive.

CAPSTONE ADDS COLOUR

US publisher Capstone is to follow up its recent forays into the minefield that is film licensing (which has so far produced the less than notable Home Alone, The Taking Of Beverly Hills and Bill And Ted's Excellent Adventure games) with a series of 'electronic colouring books' aimed squarely at the younger user and once again with cinematic endorsement in tow.

The FernGully and Rock-A-Doodle Computerised Colouring Books are both based on the animated feature films of the same names, while the Home Alone Computerised Colouring Book depicts the exploits of Macauley Culkin's cinematic alter ego, Kevin, and complements Capstone's game of the film.

All three programs make use of keyboard, mouse or joystick and can handle up to 256 on-screen colours, while support is provided for over 150 dot matrix and laser printers (including colour printers).

All three 'books' will be available soon, priced at £19.99 apiece. Contact Capstone's UK distributor, Accolade, on (081) 877 0880.



NOT SO GRIM UP NORTH

Experienced pilots of Microsoft's Flight Simulator IV who are just a little fed up with making the long-haul round trip to Waikiki may be interested to hear of the Northern England Scenery Disk.

Designed and produced by Flight Simulations, this 7Mb scenery enhancement covers the whole of Northern Ireland, the Isle of Man, and parts as far east as Newcastle and Skegness. In addition, it allows adventurous pilots the opportunity to buzz even Jersey and Guernsey.

To run this new scenery update, users will need Flight Simulator IV, the Aircraft and Scenery Designer and Western European Scenery The Northern England Scenery disk will be available soon, priced at £39.99. Further information can be had from Flight Simulations on (061) 761 1902.

STILL MORE VIRGIN TERRITORY

● Richard Branson's Empire grows again as the chain of Virgin Games Centres expands still further.

The chain, which began 1992 by announcing plans to open 15 new Games Centres during the year, has now revised this figure to allow for 20 new sites instead.

Much of the forthcoming expansion will take place north of Hadrian's Wall, with stores due to open in Falkirk, Edinburgh and East

Kilbride, joining those already in existence in Aberdeen, Edinburgh (again!) and Glasgow.

With the arrival of the five extra stores and an unspecified number of Virgin Megastores, the retail giant will boast a total of 32 Games Centres and 20 Megastores by the beginning of next year.

All of this expansion comes at a time when another games-dedicated chain, the 21-shop Microbyte operation, has been put up for sale following severe financial difficulties.

SONG AND DANCE SOFTWARE

● PC Services has just released the latest version of its 'song processing' package, SongWright v5.1.

Boasting full MIDI support and AdLib and Soundblaster compatibility, it produces WYSIWYG screens of musical notation for printing on a variety of printers.

SongWright v5.1 is available now, priced at £99 (exclusive of VAT). Further details from PC Services on (081) 658 7251.

FORTY BIRDS AND UNLIMITED PREY

If there's a modern military aircraft not included in Birds of Prey, it's probably not worth flying.

So whether you choose to be a Western or a Soviet pilot,



IBM/PC £39.99

AMIGA £34.99

flying a fighter or a bomber you can do it all in one game.

Each of the different mission types, ranging from Aerial Reconnaissance and Interception to Bombing Raids and Troop Drops is open-ended. The possibilities are unlimited.

Choose from a vast array of military might including the F-117A Stealth Fighter, the Tornado F Mk. 3, the BAC Harrier Gr Mk.3 and the Mig-29 Fulcrum, 40 planes in total.

Whichever you opt for, you'll be confronted by a frighteningly accurate simulation of state-of-the-art warfare.

And whichever mission you choose, you'll find yourself flying into a real-world environment of continuous action taking place on land and sea.

Before you take off however, you must plot the positions of your enemies and conjure up strategies to destroy them. Then you arm your aircraft from a bewildering array of hi-tech weaponry.

Once in the air, complex mathematics calculate the maximum limits your choice of aircraft could realistically attain, given it's weight, payload and aerodynamics.

Four years in the making, Argonaut Software have devised what Jez San describes as "the most realistic and dynamic world ever created".

Take off.



ARGONAUT
Software Ltd.



Available on IBM/PC and Amiga with 1 MB req.



ELECTRONIC ARTS™

Electronic Arts, Langley Business Centre, 11-49 Station Road, Langley, Berks SL3 8YN, Tel: 0753 549442, Fax: 0753 546672

A GREY BOX WITH STYLE

You've seen the advertisements, now see the machines. The Ambra PCs are compatibles like no other compatibles; they're IBM's own distinctively different PC clones. Christina Erskine assesses the 386SX-based Ambra Sprinta

The Ambra Sprinta has Design with a capital D plastered all over it. From that rather irksome 'a' at the end of Sprinta to the bevelling, lips, and contours of the PC itself, the product design team has been trying extremely hard to make sure that this particular grey box stands out from the crowd.

This approach makes it all the more interesting that behind ICPI, the company producing the Ambras, is mighty IBM itself, more normally known for the greyest of grey boxes. In a classic case of joining 'em and beating 'em, IBM is cloning its own standard.

The full range comprises three PCs, the Sprinta, Hurdla and Treka (you can see the train of thought here — I have a dread feeling about the potential "Maratha" machine). The first two are desktop 386SX models, while the Treka is a 386SL (low power version of the 386SX) notebook. The Hurdla has 4Mb RAM and a 16K cache, and comes in 80Mb and 160Mb hard disk versions, while the Sprinta has 4Mb but no cache, and a choice of 40Mb or 80Mb on the hard disk. The Sprinta's monitor is plain old VGA, the Hurdla's SVGA, and there the differences essentially end.

Although the machines are being sold through three conventional channels — dealer, reseller and retail — the Sprinta model, which PC Review was supplied with for evaluation, is targeted at the high street market, specifically Ryman's, Wilding's and John Lewis branches. The consumer who is looking for a PC to use at home for a variety of applications, which is easy to use and won't look like an eyesore in the living room, will, thinks ICPI, be won over by the sheer style of the Ambra range. "We hope that the styling will become a theme of the range," explains ICPI's general manager Alan Willsher. "The idea is that the product should be practical enough to use in an office, but attractive enough for the home."

The trouble with the idiosyncratic design is that one becomes locked into the conventional layout of PCs and there are features of the Ambra that are distinctly unusual. The mouse, for example, caused a

certain amount of argument around the PC Review office: the buttons are set vertically at the front of the mouse, rather than on top, so that that you pull back with your fingers to click the button, while your palm rests on the top dome. I found it uncomfortable to use, but then I probably have smaller hands than the average PC user, and the larger handed deputy editor thought it perfectly usable (Alan Willsher thinks small hands is a feeble excuse and that I'm just not trying hard enough to like it.)

Then there's the keyboard, which has a convex sloping fascia which certainly makes for comfortable typing but a very thuddy typing action with little 'travel' on the keys. It *feels* as though you're hitting cardboard under the keys, although I'm sure it's really plastic under there.

But the 'features' are generally there for a reason: we puzzled over the thin lip at the front of the monitor until it was pointed out that this is deliberately there to make it easier to operate the tile 'n' swivel, and the slightly awkward recess at one side of the disk drive slot does ensure that

"monitor"?

The Sprinta comes with Windows 3.1, installed and ready to go, plus that old favourite Lemmings, and Works for Windows, the integrated word processing, database and spreadsheet package.

Anyone who dislikes the palaver of setting up and configuring machines will appreciate the Sprinta, which comes with Windows 3.1 ready installed, called up from Autoexec.bat file, and — even more importantly — ready to play Lemmings. If you want to install DOS-based games, you can remove the Windows call-up line from the Autoexec.bat or have them load from Windows.

The slimline casing is nice and neat on the desk. There are three free 16-bit expansion slots (one of which could be full-length) and one extra drive (the cut-out-able front for the 5.25" drive or CD-ROM drive does rather spoil the look of casing). The clear plastic strip of blurb across the top suggests you could use the slots for network, modem and game cards. Networking at home? I'd get a soundboard, but

three should be enough for most uses.

For expansion purposes, it's easy to get at the innards since the casing is secured by just two screws, and the layout of the boards inside is clean and uncluttered.

The monitor is a clear 14" screen, and all the brightness and alignment controls are conveniently placed at the front. The flat vent at the top looks like an excellent dust trap, but is actually intended to provide a convenient ledge for your keyboard when the machine is not in use (design again, you see).

The Ambra range, so far, comprises of low-end machines — these days, with 386DX machines around for under £1,000 and 486s available for not much more, a 386SX-based PC is definitely low-end, and you could put your own system together for less if you shopped around. But the Ambras, like the Amstrad Family Packs, are PCs as commodities — designed to appeal to the consumer, and ready to run as you as soon as you plug it in.



you insert disks with some care instead of hurling them into the drive. But some things are bit self-conscious: having the ports labelled at the back is an excellent (and obvious) idea, but why are little icons deemed to be clearer than, say, the words "keyboard", "serial" (the serial port icon is hardly intuitive) and

Ambra Sprinta

25MHz 80386SX processor
4Mb RAM
40Mb/80Mb hard disk
1.44Mb 3.5" disk drive
VGA or SVGA graphics and monitor
PS/2 style mouse
Mouse mat

Works for Windows
Lemmings
Windows 3.1
DOS 5.0
12 months on-site maintenance
Telephone hotline support
£957.63 for 40Mb, SVGA model, inclusive of Vat
£1,034.00 for 80Mb, SVGA model, inclusive of Vat



FALCON EMERGES SUPREME

Digital Integration's Action 16 budget software label is going upmarket – not to mention up, up and away – with the launch of Action 16 Supreme, a new category to add to its existing Classic and Premier ranges.

The first title to appear in this new sector will be the once all-conquering Spectrum HoloByte flight and fight sim, Falcon.

Although this ageing warbird has definitely been left for dead by recent arrivals in the digital airspace (most notably its younger and more advanced brother, Falcon v3.0), it remains a complex and challenging enough simulation of high-speed air combat and represents good value to the newcomer at £14.99.

No details are available as yet as to any further additions to the Supremes, but you could always find out for yourself by calling (0276) 684959.

WINDOWS UTILITIES

The emergence of Windows as a major factor in PC software publishing is further underlined by Mindscape's announcement of two new utilities, Squeeze and Rightpaint, both designed (by US developer Icom) for use with the system.

Described as a 'personal file and application utility', Squeeze is designed to launch files and applications more efficiently and quickly through the Windows interface. Using this application, a single mouse click or keystroke can be defined and used to leap straight into any application, or indeed switch instantly between applications.

Rightpaint, on the other hand, is an advanced graphics and art package which works in 256-colour VGA and supports all major picture formats, including TGA, GIF, PICT, DIB, PCX and TIFF.

Both products are available now, Squeeze priced at £59.95 and Rightpaint at £79.95 (both prices are exclusive of VAT). Interested Windowphiles can contact Mindscape on (0444) 246333.

MICROPROSE SEX SHOCKER

MicroProse is throwing off its mantle of decency and good taste in a bid to beat Sierra On-Line and Lucasfilm at their own game. Its forthcoming graphic adventure, Rex Nebular and the Cosmic Gender Bender, features the galaxy's most outrageous interstellar adventurer and womanizer extraordinaire in his most dangerous adventure ever, on Terre Androgena, a planet entirely populated by bizarre alien women.

Apparently designed specifically with the growing body of female games players in mind, this gripping (or should that be groping?) animated adventure will be available in October. Details from MicroProse on (0666) 504326.

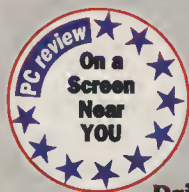
*Undersexed Women On Distant Planet
seek interstellar stud to inject excitement
into their population. Must have starship,
a lust for adventure and the right equipment.
Call Terra Androgena and leave message.
Two-minute men need not reply.*

*When Rex Nebular arrives,
they'll get all the excitement
they can handle*

MICROPROSETM
SIMULATION • SOFTWARE

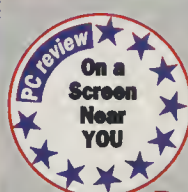
Seriously Fun Software

Rex Nebular is coming soon for IBM PC Compatibles.
MicroProse Ltd. Unit 1, Hampton Road Industrial Estate,
Tetbury Glos GL8 8LD. Tel: 0666 504 326



Title: Harrier Assault AV-8B
Development team: Simis
Genre: Flight simulation
Publisher: Domark (081) 780 2222
Release date: October
Price: £39.99

The latest simulation from the makers of Mig-29



Title: Harrier Jump-jet
Development team: MPS Labs UK
Genre: Flight simulation
Publisher: MicroProse (0666) 504326
Release date: End of

September
Price: £44.99

The first flight simulation to use Gouraud shading to render realistic landscapes



Harrier HUD to HUD

This autumn, the most intriguing military aircraft finally gets to make its PC debut in not one, but two simulations: one from the masters of simulation, MicroProse, the other from Domark.

Although MicroProse is an American company, its simulation is the first to be developed entirely by the UK development team, and, by all accounts, it has already had jaws dropping on the other side of the Atlantic.

Domark's simulation is the third game to be developed by Simis, the team responsible for Mig-29 and Mig-29M Super Fulcrum. While most flight simulation fans were

excited that Soviet aircraft were at last receiving some long overdue attention, most were a little disappointed that the latter two games were a little rough around the edges. Having learned its lesson from those games, The Kremlin will be taking care of the sound and graphics in the new game while Simis is left to concentrate on its strong areas, developing the flight model and game play.

Simis actually has a background in aviation software, so you can expect the flight model for the Harrier to be as realistic as was that for the two Soviet planes. Although the MicroProse team doesn't have this advantage, it is

taking great pains to get its model as exact as possible, and to this end the team has been helped by real Harrier pilots at RAF Wittering who have been drafted in to put the simulation through its paces. Even though the simulation is still short of several features the pilots are already impressed with what they've seen.

The MicroProse simulation will feature two active versions of the Harrier, the AV8-B (which is the aircraft also featured in Domark's game) and the GR-7, these being the updated McDonnell Douglas/BAe version of the aircraft used by both the US Marines and the RAF (although its model is

known as the GR-S), and the night-attack version, nicknamed Nightbird. When flying the latter the game will actually simulate the experience of flying while wearing night-vision goggles, so that the view and the instrumentation will appear in that eerie luminous green so characteristic of thermal imaging systems. Both of these planes will be able to fly missions in one of three scenarios, Hong Kong, the Falkland Islands, and a fictitious world called Nord Kapp.

There are two ways of playing the game, either as a day campaign, in which you might, for example, fly a reconnaissance mission in the morning followed by a bombing run, or you can play a full campaign game in which events on one day will have a direct effect on the progress of the conflict on subsequent days.

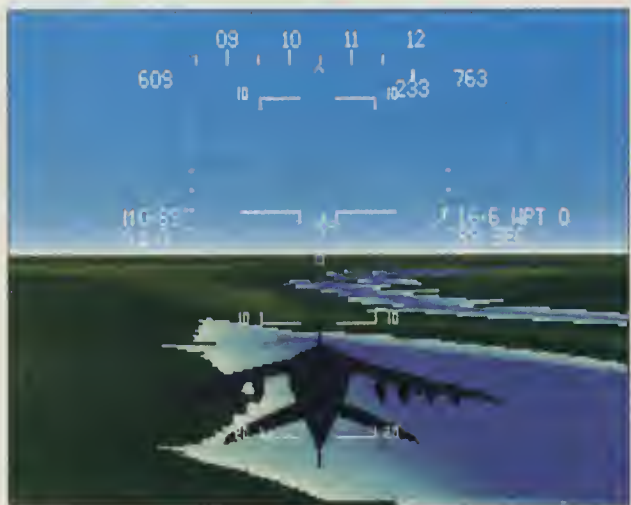
Where both companies are really hoping that their simulations will score is in two unique approaches to landscape generation. Traditionally, flight simulations have tended to skip on ground detail and realism, but this is very unsatisfactory for a simulation of a plane which usually flies low level missions. Each company has found

Compare and contrast! The cockpit in Harrier Assault has been simplified, but remains as true to the original as it can be, given the constraints of a PC-based simulation.





How the real thing looks! This was one of a series of photographs taken by The Kremlin as part of the preparation for Harrier Assault.



Here the Gouraud Shading used in Harrier Jump-jet is shown off to good effect. Although these hills and rivers look so much more realistic, they are actually based on traditional polygon constructed landscapes.

a way to make the landscapes look more realistic and less like Legoland.

Simis has stuck to a traditional filled-polygon landscape, but has implemented a system known as depth queueing. This system calculates the relative visibility of objects depending on their distance from a point of reference in the foreground, that being the position of the Harrier. Objects close to the foreground will be clear and sharp, while those in the distance are hazy and indistinct. The effect is quite stunning as distant mountains and lakes slowly materialise from the haze on the horizon as the Harrier approaches them. If you've grown accustomed to seeing large objects suddenly appear as if by magic in other flight simulations, then you will find the scenery in Harrier Assault refreshingly real.

The technique that MPS Labs have chosen to use is known as Gouraud Shading. This technique first hit the news over a year ago when word came in of a couple of games in development which were to use it. Cybercon III (to be reviewed next issue) uses it for some objects, and it is the main selling point of Empire's forthcoming Eye of the Storm, but

Harrier Jump-jet is the first flight simulation to use the technique. It involves subtly blending the colours on adjacent surfaces of a polygon to produce a graduated shading that masks the hard edges of the polygons and gives the impression of a curved surface rather than a multi-faceted flat one. Because this technique is based on conventional filled polygons, the data is capable of generating these, so the Gouraud Shading can be switched off for slower machines which don't have the processing power to generate the smoother scenery quickly enough.

The effect is quite amazing. Gone are the hills that look like they've been constructed with kiddies playbricks, and the perfectly flat rivers, and in their place are smooth, rolling hills, and realistic rivers with shallows and deep centres. Take the plane low and fly down into the valleys and you'll really appreciate the difference.

It looks like, having waited such a long time, Harrier fans are going to be spoilt for choice this autumn. Both games have something different to offer, and both, in their own way, are taking an impressively refreshing approach to flight simulation.

ATAC



SECRET ENEMY

SECRET WAR

SECRET FORCE

It's no secret. ATAC is striking back!

Deploy the Advanced Tactical Air Command
A strategic flight simulation from MicroProse

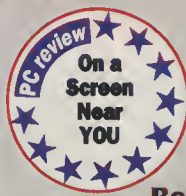
MICROPROSE

ATAC

Released first on IBM PC Compatibles followed by
Commodore Amiga and Atari ST

MicroProse Ltd. Unit 1 Hampton Road Industrial Estate
Tetbury, Glos. GL8 8LD. UK.

Tel 0666 504 326.



Title: Formula One Grand Prix
Publisher: MicroProse
Genre: Racing simulation
Programming team: In-house

Release date: October

Price: £39.99

Improved version of the highly successful motor racing simulation



While Nigel Mansell is tearing up tarmac on courses all over the world and leaving other drivers floundering in his exhaust fumes, MicroProse is preparing to put its own pedal to the metal with the PC version of the game that set the standard for all racing games to come on the 68000 machines, Geoff Crammond's Formula One Grand Prix.

Renamed simply Formula One Grand Prix – so as not to confuse the large American audience that will make up the majority of MicroProse's sales figures ("Geoff who?") – the masterpiece of three dimensional technology isn't intended to be a simple transfer of code. Both Crammond and Tower of Babel author Pete Cooke have spent the last three months adapting the game to make full use of the PC's advanced capabilities.

To start with, the graphics are getting an overhaul: no longer will the pit crews have bright red faces, nor will the trees be all the same shade of green. Animations replace the static screen sections of the original, and more race data will be available to the player while he zips around the track with all the authority of a race marshall with a red flag. When you would crash in the Amiga and ST versions, you would normally get one of three screens to illustrate the severity of

The graphics in the PC version have been completely updated to suit 256-colour machines and as a result the 3D is even more impressive than before.



Formula One Grand Prix

the damage incurred. In the PC version, these are replaced by an outstanding piece of animation, showing your car careering off the tarmac and into the side of the track in full 3D glory.

What sets the game apart from its rivals is the sheer speed at which everything runs and the accuracy of track data that Crammond and co have managed to recreate. All 16 of the world's championship courses have been mapped down to the finest detail and have been transferred lock, stock and shrub growing by the side of the road to the game. Thanks to the drivers of both the McLaren and the Footwork teams who have provided endless amounts of information, Norman Surplus – the man responsible for inputting all the track data – has

made sure that if the drivers see it as they drive round the narrow streets of Monaco or the wooded straights of Hockenheim, you see it in the game.

"The Footwork and McLaren drivers worked very closely with us," says Steve Perry, product supervisor for the PC version. "They supplied us with a vast amount of technical detail, based on real Formula One world data. It's not used in the same complex way as in real-life but scaled-down versions of the information are. When they played the game, they were able to tell what was coming next. If they picked a track and drove round it, although it was presented for them in a very simplified manner, they considered it to be as close as you can get to driving round the track for real."

Anyone that's played the Amiga or ST version will know how absorbing the game can become, mainly due to the gradual learning curve that allows you to get used to the way a Formula One car handles (the car specifications are actually so accurate that it handles – according to the designers and the drivers at McLaren – just like the real thing).

To add to the realism and atmosphere within the game, MicroProse are trying to include the official names and statistics of the 1991 World Championship drivers and teams. "We wanted to put them in the first two versions," explains Perry, "but were advised against it for various reasons.

However, there shouldn't be any real problem as all those names are actually public domain and we're working on getting them in. We are talking to FISA, the sport's governing body, with a view to a licence as well as various racing journals."

Currently timed to coincide with the release of Grand Prix is a brand new control method from RC Simulations. Working along similar lines to their optical flight stick (see Joystick feature in Issue 10), the optical steering wheel is a base-free control stick that gives you complete freedom over control of your car. Relying on sensors to tell the computer exactly how far you're turning it, and combining this with data supplied by the optional foot pedals, the stick should be one of the most accurate of its kind. The designers at MicroProse have already experimented with prototypes of the stick and say that it is one of the best ways of playing the game they've come across.

When Formula One Grand Prix is released, no doubt amidst a flurry of racing hats, competitions to win days out at Silverstone and countless other racing-related freebies, this year's season should just be entering the final stages and no doubt the current success of our Nigel will just help to point everyone in the right direction (as far as MicroProse is concerned).

● See On the Spot on page 28 for more on Grand Prix.



ATAC

**A strategic
flight simulation from
MicroProse**



THE SECRET ENEMY.

Coca bushes are grown deep in the Colombian jungle and provide the raw materials for the drug barons to produce cocaine; the drug that is ripping apart the fabric of society in our cities and towns.



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An elite force is needed to counter the might of the enormously rich and powerful drug barons. To fight fire with fire, strike at the heart of their production process and watch their profits go up in smoke.

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A TRULY OLYMPIC



COMPETE
WITH THE
BIGGEST



COMPETE
WITH THE
BEST

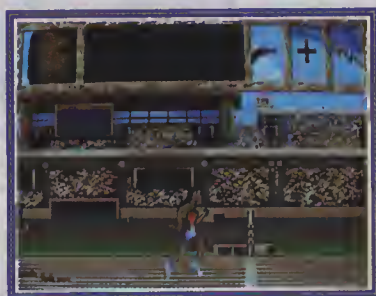


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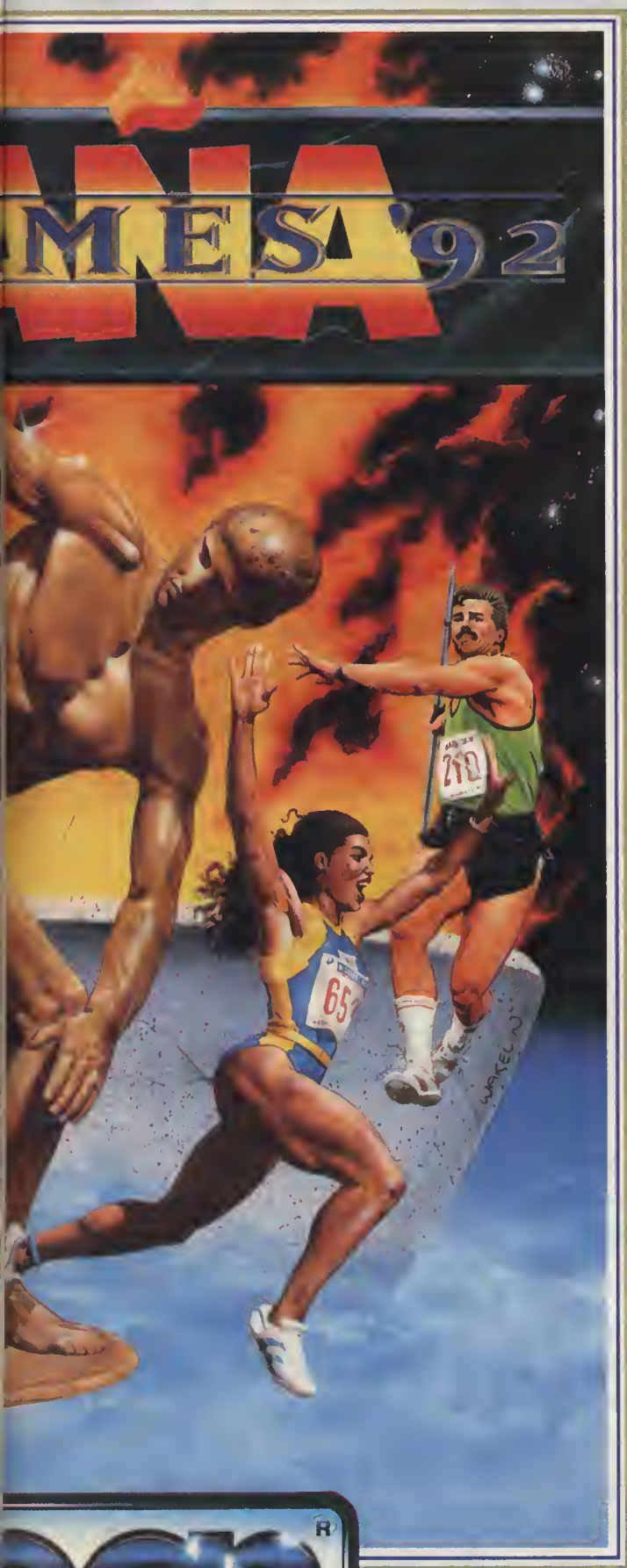
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AT YOUR
PEAK

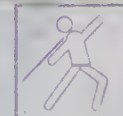


HALL OF FAME

Includes the history of
the games and the
winning contestants'
achievements.

Compare your team
members' performances to
those of the all time greats
as you attempt to break
world records.

COMPETE
WITH THE
GREATS



SPECIAL

Fancy taking the plunge into multimedia but don't want to buy a brand new PC? Paul Presley test drives Creative Labs' new upgrade kit

CD-ROM is still a growing force, but since most of us can't afford to invest in a brand new multimedia PC, it's not growing too fast. Now, thanks to Creative Labs, the people behind the best-selling Sound Blaster, your current PC can be transformed into a marvel of hi-tech, compact disc compatible machinery. All you need is a spare disk slot in your CPU, a Phillips' screwdriver and a pound short of £550 + VAT (or £640 plus VAT if you want an external CD-ROM drive). The kit contains everything you'll need to run today's CD-ROM software, as well as a few nice little extras – most notably Windows 3.1.

But to get any of it going you first have

to install the CD-ROM drive, a task that is no mean feat. Personally, I don't mind taking the top of my machine every now and then, to install a soundboard or game card, but putting in a brand new disk drive was always a little beyond my capabilities. Thankfully, there's a pretty good step by step guide to follow, although don't be surprised if you have to get creative with your power supply distribution cables (in my case I had to get hold of an cable extension to make it reach the drive's power socket). One other thing to note is that it's advisable to install the Sound Blaster Pro before the drive otherwise you'll have a myriad of wires hanging loose inside your machine. Needless to say the four-page

guide doesn't mention this.

On the whole, installing the drive is fairly simple (I imagine the external drive setup is even easier although I haven't seen this package yet) and shouldn't take longer than an hour, including the time needed to install all the relevant software packages. One slight quibble is that there wasn't a way to secure the drive in place on my machine (an Elonex 286M-120) and having a disk drive sliding around whenever you insert a CD is a little worrying. Still, it hasn't caused any problems ... yet.

Once it's up and running, the drive is actually pretty good. It's certainly one of the faster CD-ROM drives I've had the pleasure of experiencing, zipping along at a healthy 390ms and at times managing to outperform my humble little 286's 20MHz hard drive. One really nice feature is that using the Vedit2 program or one of the many media player programs in Windows 3.1 you can play music from standard CDs while you work. Always nice to write a review to the sounds of Beethoven, say I.

The Sound Blaster Pro also handles well, doing everything it boasts and more. With the actual board is a MIDI kit, allowing you to connect a MIDI compatible keyboard to the PC so that they can make beautiful music together, or in my case a shaky rendition of Jingle Bells (why is it always Jingle Bells?). All the software is included and I'm sure that if you had even an inkling of musical ability and enough perserverance to stick with all, you'd probably end up with a fair old tune on the digital Joanna.

For once with a bundled piece of hardware, the software included is actually pretty good quality. Windows 3.1 is the essential tool for the serious PC user, this version including the Windows For Multimedia Extensions that was a separate entity with version 3.0. To make use of the various multimedia features, you'll have to



The Creative Multimedia Upgrade Kit - internal drive version. Not pictured are Sherlock Holmes Consulting Detective, Creative Sounds and Microsoft Bookshelf for Windows. The version pictured here contains the older Windows 3.0 with separate multimedia extensions CD. The Windows 3.1 version is also available.

Creative Multimedia Upgrade Kit

install the relevant device drivers (a procedure that's clearly explained in the Windows 3.1 manual). Should you have any problems with this (as I did), Westpoint's Technical Support department provides plenty of help.

To complement Windows – and to show off the multimedia extensions in all their glory – is Microsoft Bookshelf for Windows, a complete reference library containing the Hammond Atlas, the American Heritage Dictionary, the Concise Columbia Encyclopedia, Bartlett's Familiar Quotations, Roget's II Thesaurus, the Concise Dictionary of Quotations and the World Almanac 1991. To show what it can do, the CD provides speech for certain quotes, pronunciations of words and any musical notations while backing them up with animations for relevant articles. It's a shame that not everything was quoted nor were there samples of musical works to go with all the encyclopaedic references for famous musicians, but on the whole this is a pretty useful tool and a good dictionary and thesaurus is always handy.

Showing off the Sound Blaster Pro is the Creative Sounds CD, a collection of musical scores and sound effects that have very little use other than to include on your Windows Sound panel (so that you can have Mac-like spot sound effects when you perform certain actions).

By far the most impressive piece of software in the package, and certainly the one you'll want to use to appreciate what multimedia can really do is Sherlock Holmes Consulting Detective from ICOM Systems (reviewed in Issue 7). Be Sherlock Holmes exploring the murky world of 1800s London, watch the amazing video scenes that make up the majority of the game and hear the actors speak as they eliminate the impossibilities to leave the improbable truths. Gasp as the mouth movements almost, just almost, match up to the speech you hear. A very impressive game that gives you an excellent example of what CD-ROM games are going to be like in the future.

And that is more or less that. A good package, if a little pricey, but on the whole well worth the money if you really want to make that upgrade. The majority of this test took place on a 286 machine running at 16Mhz and there was hardly a problem to be found (even Windows 3.1 worked with a minimum of fuss – a rare circumstance indeed). This is actually the perfect way to introduce yourself to the oft-times bewildering world of CD-ROM and multimedia as it shows you exactly what the genre is capable of, from games applications to serious use. The only thing missing is a pair of speakers for the soundboard.

What you get

CD-ROM drive

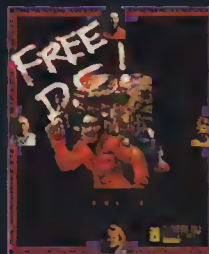
Sound Blaster Pro sound board
Windows 3.1

Microsoft Bookshelf for Windows
Sherlock Holmes Consulting
Detective

Creative Sound with Prosonus
Half a ton of polystyrene padding
chips



"Hey freedom
fighter, how's
about a date
with DC's No1
party
animal?"



Available for PC & Compatibles & coming soon for Amiga



A SERIOUS EXPERIENCE

COVER STORY

Not everybody's inquiry makes it on to the letters pages, so in response to many of the 'quick' questions that we are frequently asked, from how to clean a dusty keyboard, to choosing expansion slots, to saving hard disk space, we've assembled a montage of PC tips and tactics to create this grand tour around the PC. With any luck, you'll find some of the hints here may be just what you're looking for.



1. Central processing unit (CPU)
2. Monitor
3. 5.25" disk drive
4. Power on-off switch
5. 3.5" disk drive
6. Processor speed indicator
7. Hard reset
8. Turbo on-off switch
9. Disk controller
10. Parallel/serial port controller
11. Soundboard
12. VGA graphics card

A voyage around the PC

What follows is a grand old mix of tips, some of the less well-known MS-DOS commands, some time and trauma saving ideas, and a few cautionary tales, all to do with making life with your PC that bit easier. We hope that some, at least, will be new to you and that most will prove useful.

Hard disks

1. Keep your hard disk tidy. If you're continually installing, de-installing and re-installing games and other programs, the chances are that your hard disk will need a good clear-out every month or so to keep it tidy and to ensure that precious space isn't wasted.

Your games and other programs should each have their own directory and you should use sub-directories rather than have too many files in a single directory. MS-DOS has a limit of 512 files in the root directory and, while there's no limit for sub-directories, the operating system will slow down if there are more than 150 files in a sub-directory.

Use your DOS Shell program (DOS 4.0 upwards only) or a file management program, such as XTree Gold or Norton Commander for easy scanning of files on the hard disk. Extraneous, obsolete, or misplaced files can be more easily moved or deleted.



2. Ensure optimum performance.

Programs such as Spinrite from Riva will check your hard disk for any "soft" or damaged sectors, attempt to repair them, spot any corrupted data (and attempt to repair that) and determine the best interleave factor for your hard disk (the number of disk revolutions it takes for a whole track to be read). If you think your disk is under-performing or a bit off-colour, a diagnostic check with such a program is less traumatic than a subsequent hard disk failure and less expensive than a new hard disk.

3. Speed up your hard disk.

PC Tools and Norton Utilities both contain defragmentation modules which will reorganise your disk so that data is stored consecutively, instead of wherever DOS could find some space free. This can make a noticeable difference to the speed of access. Important: back up all your hard disk data before trying out any such program.

4. Compress your programs.

Whether you have a 20Mb hard disk or 120Mb, it's probably full. There is nothing more maddening than having to de-install a game which took over an hour to install in the first place, just to spend another hour or so installing a new game. Buying a new hard disk is an expensive option — try compressing less well-used programs to save valuable space.

PKZip is an excellent shareware compression program, which can compress data, graphic and text files down to maybe 30% of the original — compression on executable (.exe) files is less — so you can zip up whole games into a single, much smaller file. Its sister package PKLite, will also launch compressed

applications so that you won't have to unzip files manually before you can play the games again.

6. Use the command Chkdsk. This will check for any 'undead' files — files you've deleted but which are still present in the File Allocation Task — and files which have been marked as occupying the same space on the disk. This happens most frequently if you don't exit 'cleanly' from programs (for instance, if you turn the PC off with the power switch in the middle of a game). If your hard disk space is less than it should be, try Chkdsk before you assume there's a virus or something sinister at work:

CHKDSK /f

The /f switch stands for Fix, and means that DOS will then offer to convert the lost chains and clusters (your zombie files) it finds to files, of the form File0000.chk, which you can then view (using the command Type File0000.chk) and delete.

7. Back up your hard disk regularly.

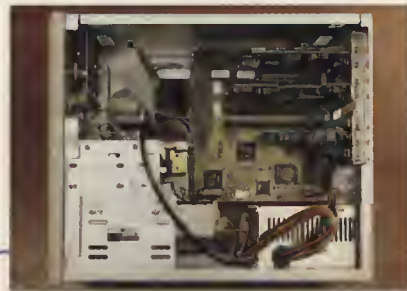
Keep your games master disks and authorised copies safely, and back up files containing saved game positions, and of course any other data programs, such as word processed documents.

8. Park your hard disks at the end of a session. The read/write heads rest just above the surface of the disk and a severe jolt could damage the disk. This is especially important if you're moving your PC to a different location. Parking moves the heads to an unused area of the disk, and is done with software — there may well be a Park program on the floppy supplied with your hard disk. If not, there are public domain parking programs, and there's also one in PC Tools.

The processor

1. Consider a numeric co-processor.

Your PC will have an empty socket for a numeric co-processor. Fitting one will do absolutely nothing for your PC's performance unless you are using software specifically designed to utilise it. Since the co-processor speeds up floating point maths operations, it's mainly programs such as spreadsheets and CAD/CAM that benefit most, but the idea of making use of it to speed up calculations in games is beginning to be kicked around. Falcon 3.0 is the most notable example of a game which can make use of a fitted maths co-processor, while programs such as fractal generators will also make use of it. Note that if you





do intend to buy a co-processor, it needs to match the main processor for speed (ie, a PC with a 25MHz 386SX processor will need a 25MHz 387SX maths co-processor).

Keyboards

1. Replacing lost keys and letters. Individual keys on the keyboard often do work themselves loose after years of heavy use. Probably the best way to secure them is with a minute blob of Blotak or similar – don't use glue. If the key-cap is lost altogether, trying ringing the manufacturer, which should be able to supply you with a spare. Another annoying problem is that, again after heavy use, the letters on the top of the keys can simply wear away, a matter easily rectified with a Letraset kit and a steady hand.

2. Safe keyboard cleaning. Pouring



coffee, or stronger liquor, over your keyboard is likely to prove terminal, but dust and dirt can be fairly easily removed with a vacuum cleaner. Mail order catalogues often show special mini-vacuum cleaners designed for keyboards, but in truth there's no reason why you shouldn't use the normal household variety, fitted with that brush attachment that never seems to be used for anything anyway. More easily manipulated would be a 'Dust-buster' type vacuum cleaner, if you have such a thing.

Also available, from Tandy stores, among others, are special tweezers for removing key-caps (here, you do want the specialist variety; don't use ordinary tweezers or a screwdriver). With these, you can pop up the key, remove any grime underneath with a damp cotton bud (don't use detergent) and replace the key-cap carefully.

Mice

1. Cleaning your mouse. If your mouse, after months of faithful service, suddenly begins to move sluggishly or jerkily, it probably needs cleaning. Turn the mouse upside down and, using a coin or ballpoint pen, slide open the disc holding the trackball in place. Remove the ball and wipe it clean, then wipe inside the cavity with a soft cloth (again, don't use detergent or proprietary cleaners). Replace the ball, slide the holding disc back into place, and you should see a marked improvement.

Note that this applies to mechanical mice only. Optical mice don't have balls; if your optical mouse is under-performing, then the lines on the mouse mat grid may be wearing off and you may well need a new mat.

Floppy disks

1. Turn low density disks into high density disks? It's possible to buy a special hole punch which will apparently transform a low density (720K) 3.5" disk into a high density disk (1.44Mb). While some people swear by these, they should be used with caution: don't store important data on a disk that's been altered this way. There is a school of thought that, these days, low density disks are only high density which have failed quality control tests. At any rate, there is a potential reliability problem with DIY treated disks – be warned.

2. Make your b: drive the a: drive. A few programs will only accept installation from the a: drive. If you've bought 3.5" disks for a game that requires drive a: and your 3.5" drive is drive b:, you can use the MS-DOS Assign command to change the drive letters temporarily:

```
assign a: b:
```

will treat your b: drive as drive a: and you can go ahead and install. Note: a warm reset (Ctrl-Alt-Del, or the reset button on your PC) or Assign (Enter) will reassign the drives back to normal.

3. Don't risk a virus. The vast majority of viruses are transferred to your hard disk by inserting an infected floppy disk into the drive. That having been said, viruses are rare and with simple precautions you need

never catch one. You can invest in a virus detector plus repairer, which is expensive (for example, S&S's Anti-Virus Toolkit is £99 for the quarterly upgraded version, although there are shareware programs such as McAfee's VirusScan which will do the job), but will buy you peace of mind, and is probably well worth it if several people use your PC so that you can't keep tabs on all the disks going in and out of the machine. You can buy a simple virus detector, which is cheaper, which will buy you peace of mind until it detects a virus (hopefully, of course, it never will) and then you will have to buy a toolkit to repair it.

If you don't fancy the outlay, follow the rules below and you should stay virus-free:

- Don't use disks from unknown sources.

- Don't use disks that have 'done the rounds', copying and moving data from PC to PC.

- Don't use pirated disks.

- Write-protect floppy disks unless you specifically need to copy data on to them (this reduces the risk of spreading a virus).

Cover disks from magazines shouldn't pose a problem. PC Review makes stringent virus checks on cover disks and most other computer magazines do the same.

4. Avoid virus recurrence. If you do find a virus on your hard disk, then repair not only the hard disk, but also test all your used floppy disks. Viruses recur when you dutifully clean out the hard disk, only to re-use a floppy two weeks later that was infected in the original outbreak.

The presence of a virus on a floppy disk doesn't conclusively prove that you've found the original source of infection — it

Your own menu

If you have lots of games which you play regularly, and all the constant switching from directory to sub-directory and back again, is becoming a bind, you can create a very simple MS-DOS menu, so that to load a program you need only type its menu number and DOS will then do all the work for you.

We'll assume that you have three games, Falcon 3.0, Links, and the latest Indiana Jones adventure (a fine trio in anyone's book), that you want easy access to (you can substitute your own most-played game names and have as many as you like).

The lines below show you how to do this. You can use a word processor, in which case type in the text, pressing Enter at the end of each line, and save each file separately as an ASCII (plain text) file, or you can type directly on-screen: first, issue the command COPY CON [filename] for each of the files below. Press Enter, and the cursor moves down a line.

Type the text below exactly as it appears and press Enter at the end of each line, except the last. At the end of the last line, press Ctrl-Z to tell MS-DOS that you've finished typing the program, and return you to the C:> prompt.

Program 1
Call this file MENU.TXT

```
Main menu
1. Falcon 3.0
2. Links
3. Indiana Jones and the
Fate of Atlantis
```

Program 2
Call this file MENU.BAT

```
@echo off
cls
type c:\menu.txt
```

Program 3
Call this file 1.BAT

```
@echo off
cls
c:
cd falcon3
falcon3
cd \
menu
```

Program 4
Call this file 2.BAT

```
@echo off
cls
```


could have been infected from the hard disk.

5. Don't use unauthorised copies of programs. The arguments against piracy are well-known: it's illegal, it deprives programmers of hard-earned royalties, and it's indirectly and partly responsible for high software prices. However, these are arguments which appeal to one's moral integrity, and some people have more of this than others — there is another point for consideration: using illegally copied disks is a well-authenticated way of introducing a virus to your PC.

Many publishers tell you to make copies of your master disks to use for installation, so that you have a back-up if any of your disks become corrupted. These copies are for your own use only, and you'll find it says so in the manual.

Expansion slots

1. ISA, EISA, or MCA? The expansion bus in your PC is the area at the back devoted to expansion slots. Depending on the size of your PC, you may have just a single expansion slot (if you have an IBM PS/1, you won't have any at all, the expansion deck needs to be bought separately), or up to eight on larger machines.

There are currently three standard types of expansion buses: ISA, EISA and MCA. The chances are yours is an ISA (Industry Standard Architecture) bus. The other two didn't come into being until IBM launched the PS/2 range in 1988, with a completely new and incompatible bus. It had its reasons: current buses are designed to transmit data a maximum of 16 bits at a

time, and IBM could foresee a time when users would need to transmit at 32 bits at a time.

There was also the point that since Micro Channel Architecture (MCA) was incompatible with ISA, buyers of the PS/2 would be 'locked' into buying from IBM. Following the launch of the MCA machines, a consortium of PC-compatible manufacturers, among them Compaq and AST, developed the Extended Industry Standard Architecture bus — new again, and also capable of 32-bit data transmission, but also downwardly compatible with the original ISA.

Neither EISA nor MCA are particularly widespread at the moment. If you have an MCA machine, many of the well-known expansion cards will be available in an MCA version, but you'll need to ask specifically for it, or order direct from the manufacturer.

If you have an XT-type PC — one with an 8086, 8088, V20 or V30 processor, you will have an 8-bit expansion bus — capable of transmitting data in one-byte, or one character, chunks (there are eight bits in a byte). AT-type machines (PCs with a 80286 and upwards processor) have a 16-bit bus, and can transmit two bytes at a time.

2. Choose the right slot. The free expansion slots on AT-based machines will frequently be a mixture of those designed to take 8-bit cards and those designed to take 16-bit cards (basically, the short slots are 8-bit, the longer ones 16-bit). The standard Ad Lib Music Synthesizer Card, shown in the main picture, is an 8-bit card, while the Sound Blaster Pro is a 16-bit card. Generally speaking, you can fit an 8-



bit card into a 16-bit slot, and occasionally vice versa — a few will work this way as an 8-bit card.

3. Make sure there's enough room. Cards also vary in length. Full length cards take up the whole width of the PC, and on the opposite side of the casing from the expansion bus, your PC should have a set of clips to hold the other end of full-length cards firmly in place. The Roland soundboard is a well-known example of a full length card, and there are some very compact PCs on the market into which a full length card simply will not fit.

MS-DOS

1. Check your free RAM. Mem is a highly useful command included in DOS 4.0 and upwards, particularly for games players:

MEM

will tell you how much free RAM you currently have, so that you can tell at once if the game you have just lovingly installed on your hard disk is actually going to run with your current configuration. If you don't have DOS 4.x or 5.0, Chkdsk (see above) will do the same, but it takes longer.

2. Use the prompt command. Probably the most practical command you can include in your Autoexec.bat file is the following:

PROMPT \$p\$g

This means that instead of the somewhat reticent C:> prompt, you will get a prompt which includes the current sub-directory, eg, C:\MAXIS\ATRAN>.

At any rate, if you don't have Prompt on your Autoexec.bat, use the above command before you ever type DEL *.*. Saves a lot of tears.

3. Use the prompt command imaginatively. The \$p\$g parameters aren't the only ones you use. Try the following:

PROMPT \$t
PROMPT \$d
PROMPT \$v
PROMPT Give me your
command, master \$g

4. DOS 4.x upwards only. You can delete just a few files without having to type in the name each time by using the /p (for Pause) switch:

DEL *.TXT /p

Now, you'll get a message saying "Delete

| | | |
|----------------------|------------------|------------------------------------|
| c: | (Program I) | |
| cd links | @echo off | the commands that follow |
| links | | won't be printed on-screen |
| cd \ | cls | stands for Clear Screen |
| menu | type c:\menu.txt | prints the Menu |
| | | program on-screen |
| Program S | (Program S) | |
| Call this file 3.BAT | @echo off | |
| @echo off | cls | |
| cls | c: | returns program to |
| c: | | root directory if |
| cd atlantis | | not already there |
| atlantis | cd atlantis | Changes Directory to |
| cd \ | | the Atlantis sub-directory |
| menu | atlantis | loads Indiana Jones. Type |
| | | here the command that you |
| | | normally use to start |
| | | the program. |
| | cd \ | moves back to root directory after |
| | | you've finished playing Indy |
| | menu | executes Menu.bat program, |
| | | ie, displays your menu. |

Now restart the machine, and when C:> shows again, type Menu and hit Enter. Now all you have to do load your chosen game is hit its menu number. When you've finished playing, you'll be returned to your menu again.

These files, ending in .bat, are batch files, and are simply a set of DOS commands put together in a file to be executed one after the other.

The commands used in the files mean the following:

Incidentally, the MS-DOS 5.0 manual illustrates a variation on this theme which will give you a similar start-up menu. This one is, we think, slightly simpler to create.

this (y/n)?" for each file with the extension .txt. Quicker than typing in each time.

5. Make directory listings readable. Issue a standard Dir command and you'll see the file listing for that directory whizz through the screen — illegibly. Most people know about Dir /p to make the screen pause after each screenful, and Dir /w for a wide listing, but DOS 4.x and 5.0 will also list files in an order determined by you.

Use /on for an alphabetical listing, /od for a list in date order (oldest file first), /os for a list in order of size, starting with the smallest (these listings can also be shown in reverse order, with the switches /o-n, /o-d, and /o-s respectively). Dir /s will list not only the current directory, but all files in sub-directories as well.

These can be used in conjunction with each other:

```
dir /p/on/s
```

will list files in the current directory and sub-directories, in alphabetical order, and pause each time the screen is filled.

If you have an earlier version of DOS, you can achieve similar effects with the Sort command, but the syntax is more convoluted.

Incidentally, the reason that MS-DOS's default listing appears to show the files in an almost random order is that files are listed in order of their creation, until you start deleting files. Then the next file created is listed in place of the deleted file. This is why your newest file may not necessarily be listed at the foot of the directory.

6. Never mind the asterisks. Instead of using *.* in your commands to denote "all the files in this directory", you can just use the full stop with a space on either side:

```
COPY . A:
```

In your directory listings you'll find the first two entries are "." and "..". The two dots refer to the parent directory (thus CD.. will take you up one directory, while the single dot refers to the current directory name).

7. Upgrade to DOS 5.0. It takes up less memory, you can put drivers, and DOS itself into high memory areas, it has a

Contacts

PC Tools
Spinrite
XTree Gold
Ad Lib
Sound Blaster
Roland
MS-DOS 5.0
Anti-Virus Toolkit
Norton Commander

Central Point Software, (081) 848 1414
Rlva, (0420) 22666
Xitan, (0703) 899113
Mindscape, (0444) 246333
Westpoint Creative, (0743) 248590
Roland, (0252) 816161
Microsoft, (0734) 270001
S&S International, (0442) 877877
Symantec, (0628) 776343

half-decent DOS Shell for file management, you don't need to partition the hard disk, and it costs £69. (Make sure you buy the right disk size, DOS 5.0 will only install from drive A:, and the Subst trick listed above won't work because it requires a reset machine.)

Monitors

1. Give your monitor something interesting to do. Especially a monochrome monitor. Monochrome monitors that are left switched with the same image for hours at a time can 'burn' that image into the monitor's phosphor. Screen savers are available which run under Windows which, when no key is pressed for a while will present pretty moving pictures. These don't look nearly as fetching in monochrome as they do on colour monitors, but colour screens burn much less brightly than their mono equivalents, and the danger of burn-in isn't as great.

2. Harmless or hazardous? The case for monitor radiation being a health hazard is still not proven, but discomfort from screen glare can give you sore eyes and an aching head. The easiest way to reduce glare is to turn down the brightness and contrast controls, but screen glare filters and radiation filters can be bought. The former are often not much more use than stretching a pair of nylon tights over the screen; the latter make better claims if you're concerned about long-term health effects and are consequently much more expensive (about £200 upwards).

3. Check your dot pitch. Screen resolution is a matter of the number of pixels on-screens and VGA monitors will give you a resolution of 640 x 480, Super VGA

up to 1024 x 768, but this doesn't tell you how good the monitor is at displaying those pixels.

The monitor's dot pitch goes some way to quantifying this. This is the distance between each of the red, green and blue dots which make up the matrix displaying the colours. The smaller the distance, the more dots are needed and the sharper the picture — 0.31mm is good dot pitch and 0.28mm excellent.

4. Protect your monitor. Cover your monitor when not in use to prevent dust getting in through the vents and clogging up the works. You don't have to buy a fancy monitor hood — just place your mouse mat or keyboard over the top off the monitors once it's switched off. Note: don't cover the top of the monitor while it's in use.

Soundboards

1. Make your PC audible. Soundboards are easy to fit in a spare expansion slot. Aside from the board itself, you'll get software on disk to configure the board and maybe play you some tunes. There are currently three soundboard standards on the market: Ad Lib, which is the most widely supported, Sound Blaster, which is a close second and also used in many modern games for speech, often in conjunction with another board (yes, these developers expect you to have two soundboards) and Roland, which is superior in sound quality to both, but less widely supported. There are also a number of boards which are compatible with Ad Lib and Sound Blaster, frequently less expensive, if not as fully-featured.



Monitors make excellent dust traps, so keep yours covered when the machine is not in use. You don't need a proprietary hood, the mouse mat will do.



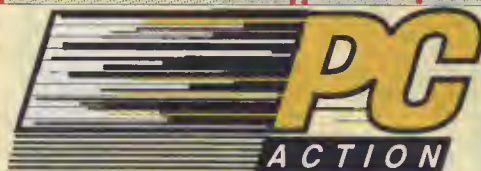
The Ad Lib Music Synthesizer Card is a common standard for aural effects in PC games. Cheaper Ad Lib compatible cards are also available.



The ball in mechanical mice can frequently become dirty and impair performance. You can easily remove it for cleaning.

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ON THE SPOT MICROPROSE

Take nine aviation buffs down to MicroProse's UK office in Tetbury, Gloucestershire, and sooner or later the conversation will get round to flight simulations.

This month's On the Spot participants put the company's demonstrators and representatives through their paces while viewing development versions of B17 Flying Fortress, ATAC, and Harrier Jump Jet — plus Geoff Crammond's Grand Prix just to make a change from flying. A tour round the buildings, and an open question and answer session rounded off the afternoon. Below follows a series of extracts from the day's discussions.

B17 Flying Fortress

Warren Hutton: Why is there no soundtrack on this demo version?

Martin Moth: As the musicians are starting to put all the bits together, this is what you generally get at the time when the game is in development, bits and pieces from the game, so that here I've got the front end, separate from the flying bit. On the sound side, we'll have composers, and all they'll do is compose the music, and

then there'll be someone doing the sound effects and they'll pop them in when we get to the stage when it'll work. There's no point in doing it too early, and there's a lot of management needed right at the end of a project, especially if it's a big project. As games get more complex, you get more people working on it. I know that with Harrier, there's about 12 people working on it, and it's going to take about 12 man-years to develop the game. And if we ever move into CD-ROM, it's going to be crazy.

Mark Owens: How much hard disk space will B17 take up?

Martin Moth: I don't honestly know at the moment, but we try not to go for huge amounts. I mean, most of Falcon 3's 11Mb is a load of digitised graphics, which take up a lot of space, and once you've seen them once, you never use them again. There ought to be an option whereby you can de-install the graphics and just get a basic game for, say, 6Mb. We try to cater for people, because obviously there's only a certain amount of games you can put on a hard disk. I've got a 40Mb hard disk at home and that's full. I've got 80Mb at work, and that's getting full now. It's silly when you have to de-install games to re-install other games.

Grand Prix

Steve Perry: We're doing a 256-colour version of this, which will mean that the PC version will have depth to the illustrations on-screen. We do listen to criticisms from users, and there have been valid criticisms of the Amiga version of Grand Prix, such as that fact that you can't tell how far in front or behind you the cars are, which is something that you would be given in your headset these days, but that will be included in the PC version.

We're also trying to get wet weather implemented in a better way on this version than on the Amiga. The odds on it happening will be the same, that is, 1 in 16 in a race, but what I'd like to do is have an ad hoc wet weather so that it might start raining during a race. With 256 colours, it's much easier to do that. Whether we've actually got the development time left is another matter. If we haven't, we won't do it, but we'll try.

We'll definitely have a two-machine head-to-head option, and we're looking at the theory of having a multiple link, to link the game across a network, and the theory works, so let's hope it does in practice. It's a pretty complex thing to do for this type of game, but we are working on multi-computer modem linking anyway. Whether it actually ends up in Grand Prix or not is another matter.

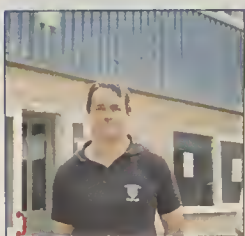
One of the reasons for Grand Prix being delayed was that Geoff Crammond, the programmer, wasn't happy with the lap-times of the other cars in the race. We actually spent about two months with 20 different testers, including most of Geoff's family and distant relatives as well, loading special versions of the game and following one car and lap after lap after lap — we've got books this thick on them — just jotting down the lap-times to see whether they're behaving reasonably or not.

Warren Hutton: Why was it not released on PC originally?

Steve Perry: Well, this is one of the major differences between the UK and

For PC Review

Chris Biddle, from Leicester



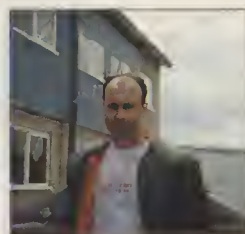
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Jerry Saltoon, from London



Warren Hutton, from Huntingdon



America. In the UK, for the last five years, the leading target machine has been the Amiga, followed very closely by the ST, because it's such an easy conversion, followed by the PC. The world market is probably about 65-70% PC now, and it's a shift that's really happened in Europe in the last two years. Grand Prix was signed up three years ago, before this big shift, so that's why it came out on the Amiga first. New products that we're signing up now are always destined for the PC first.

Warren Hutton: This rain effect, is that being done in-house?

Steve Perry: Well, yes, and with Geoff. The thing about doing the rain on the PC is that because you've got one pixel which you have in so many colours, which you don't have on the Amiga and ST is that you're not having to deal with characters, as it were, you literally deal with pixels and that's much easier just from the point of view of using the technology. The palette is more flexible because you can alter the palette on the fly. You haven't got to worry about an overall effect, you can do it locally. Manipulation of colour is very easy on the PC, it's more a question of time whether we implement it or not — we've got until the end of August.

Harrier

Michael Hurt: Have you got plans to do a head-to-head with other flight simulations?

Martin Moth: Well, we're hoping to have a link up which is not just head-to-head but enables you to fly as wingmen as well. I mean, head-to-head's fine, but it would nice for you to be able to fly togeth-

er. That's something we're hoping to work on, but obviously we've got time limits.

We could spend years and years making the game as wonderful as possible, but obviously we have budgetary constraints and we have to get a certain number of game through a year. That's not to say that we'll just shift anything, but we do have, er, comfortable development times to do games, but then if things slip, there'll be things that get left out.

Open to question

Nathan Smith: How do you make a choice about developing titles - where do you get ideas for a game?

Steve Perry: We don't generally start off our games with a fixed notion, because if you do it, it can be counter-productive - because the product can't develop, so we try to be open-minded and look for something different that hasn't been done.

ATAC, for example, came about almost accidentally, as a lot of games do. We'd actually hired the programmers, Argonaut Software, to do a completely different game and ultimately, our chief executive in America, Bill Stealey, decided that he wanted to do that job internally, and therefore we were left with a contract and no product. The project originally centred around the F23, which, the word had it at the time, in Pentagon circles, was going to win the tactical strike plane contract, which it didn't - the F22 did.

The brief was "Let's do another F-number", but we reckoned we didn't really want to do another F-number, so we came up with a whole lot of ideas for the previous product, which involved air-sea rescue, but we didn't really want to do another flight simulator per se.

We wanted a different angle, and not killing people was the biggest different angle we could think of. Plus the fact that at that time, two and a half years ago, it was fairly obvious to anybody who kept up with world news that the Cold War was coming to an abrupt end, so we didn't want a Russians vs US, or a Russians in Europe situation, we wanted something that was almost apolitical, and came up with drug barons.

One of the things we pride ourselves on at MicroProse is that we try to do things that other people would like to do but can't, or other things that people just haven't thought about doing. We think there's only been one other program about the drug war, and that was Snowstrike by US Gold, which was more of an arcade game.

Mark Owens: will you be carrying on with television advertisements?

Yvette: Yes, we will. Gamesmaster is due to run again in September, and we'll be advertising there again. We're also planning to advertise the same 6.30pm slot

but around programmes like Crystal Maze, but it did very well for us last time.

Anthony Jones: There's an awful lot produced about modern jets, but my particular interest is Second World War aircraft. Are you likely to do something else on that? I would have thought there was a big audience still, for some of the more vintage craft. B17 is the first one I can remember MicroProse doing since that plastic bag version of Hellcat Ace all those years ago.

Yvette: I think so. Depending on the response we get from B17 we may well follow up with a B52 game or the Lancaster or something like that.

Warren Hutton: Why do you advertise games so far ahead of release date?

Yvette: Well, it's for awareness ...

Warren Hutton: don't you think it's more likely to infuriate people?

Yvette: Well, we're aware of that. But wouldn't you rather see advertisements, or read previews and know that something is coming out soon.

Michael Hurt: it's nice to read about what's coming soon so that you know what's going on, it's when you ring up the software company and they tell you it's coming out at the end of June, and then you ring up then and they say it's been put back, and you ring back again and it's been put back again ...

Yvette: It's a problem that we can't avoid. If you develop a game that at the last minute is bolted together, obviously there can be problems and the game will keep falling over. At MicroProse, we think it's more important to get the game out when it's correct, rather than chucking a game out when it's bugged, and we take pride in that, it's company policy.

When we took over marketing Falcon 3.0 from Spectrum Holobyte, we took it back in and took the bugs out, and the one that is out on the shelves now is relatively bug-free. That's the way we work we won't put our name to anything that isn't finished, basically.

For MicroProse

Martin Moth, senior development manager

Steve Perry, systems manager

Yvette Weir, PR executive, below



PC Review would like to thank everybody at MicroProse for the time and trouble they took to make our visit so worthwhile. If you would like to take part in an On the Spot visit, fill in the entry form on page 143 of this issue.

MUSIC

In the second part of our series on the PC and music, Rob Beattie leads you (gently) through the MIDI minefield, recommends some low-cost keyboards, and explains how you could put together a PC music system for under £1,000.

Last month, I described MIDI as if it were the musician's (and indeed, non-musician's) Holy Grail, and while I haven't brought you this far just to contradict that, now that we're ready to go into a little more detail, it will become clear that it's not always as easy to use or

understand as it should be. That's because, as I said last month, it's essentially a communications 'layer' between two or more electronic devices, and where thou hast communications, thou shalt have confusion.

So, deep breath ...

Last month we talked about MIDI ports and the fact that there were three different kinds In, Out and Thru. Basically these do as their names suggest.

- MIDI In receives messages from another MIDI equipped device. It could be a computer with a MIDI interface, or another instrument.

- MIDI Out transmits messages to another MIDI equipped device, a computer with a MIDI interface or another instrument.

- MIDI Thru allows messages to be channelled 'through' one MIDI device to

Multi-channel sounds

MIDI keyboards

First off, let me say how blessed we are to be starting at the low end. At least in the sub-£200 range, manufacturers have cottoned on to the fact that people need manuals that are written in English. To be fair, even the mid-to-high range stuff is improving slowly, but some of the documentation I've seen from high-class acts like Korg is enough to make your skin crawl. (I once spent an afternoon on the phone with a major manufacturer trying to understand the difference between a patch, a tone and a timbre. Each time we thought we'd solved the problem they said something which contradicted something they'd said before. In the end, we agreed to call it a draw and I hung up, none the wiser.)

Three instruments, all sub-£300, all with MIDI and all with enough sounds to get you started. That price, by the way, is RRP and you'll undoubtedly find them *much* cheaper in the high street.



Casio CT-470

A four octave home keyboard with built in speakers, mini-jack out for headphones (or an amp) and MIDI In and Out sockets. This is of the

Mickey Mouse school of keyboards, but has enough sounds (220 in all) to keep you amused. It also includes all those clever extras to hook you in: auto-accompaniment turns a single note into a chord and there's an option to use one of the 100 built-in rhythms so it sounds like you've got a drummer trapped under the keys.

As a rule, synths of this price are poor at reproducing the sounds of natural instruments (piano, flute and so on) and better at 'synth' sounds (string pads, effects and so on). With low notes you also tend to get too much of the signal and not enough of the note itself, so things sound slightly out of tune. The sounds themselves are adequate for home use, and as you try different keyboards out you soon start to know where to draw the line between this kind of instrument and a semi-professional synth. My own rule of thumb is that if you feel you could gig with it in the local pub without feeling humiliated, then it's probably OK.

When switched to MIDI mode, the CT-470 can either play one sound at a time on channel 1, or four sounds on channels 1, 2, 3, and 4. Because Casio set up each of the different sounds to play across the stereo image, you get a reasonable balance, and using the cut and past features of a program like Cadenza (see main text) you can quickly build up a nice sounding piece of music.

One thing to remember, suppliers often use not only the same method of synthesis in different keyboards, but they often use the same sounds and simply dress them up in a different casing with different controls, and slightly different options. In other words, your choice may not be as wide as you think when you first check out a store, or a catalogue. As always, your ears are the best judge.

Instrument: Casio CT-470

Supplied by: Casio on (081) 450 9131

Specification: 220 sounds, 100 drum rhythms, four sounds simultaneously, MIDI In/Out, speakers

Price: £179.99



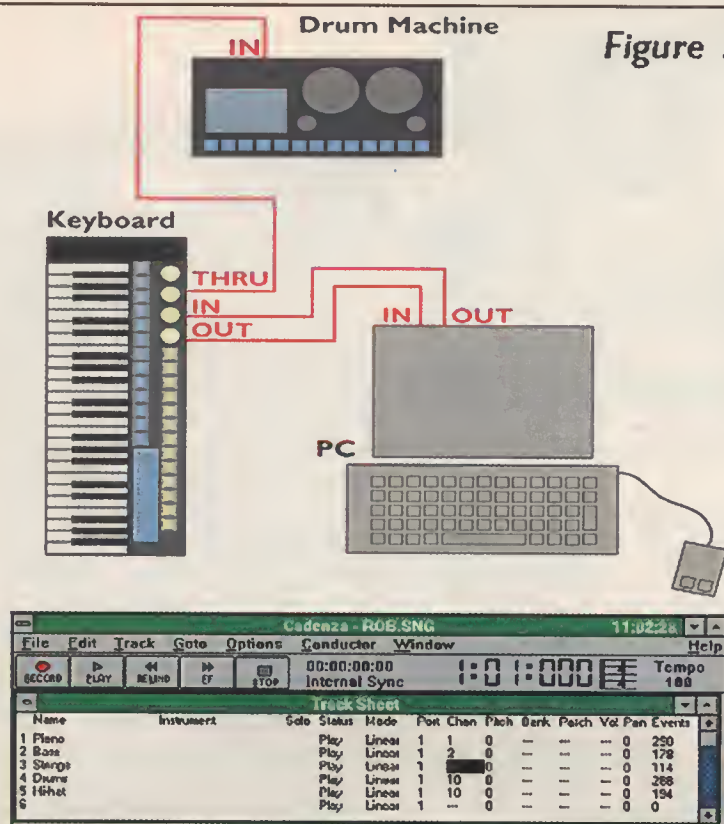
Yamaha DD-12

Something for the non-keyboard players — a drum pad with MIDI In and Out, 24 pre-set drumkits, five custom ones, 75 sounds, auto-accompaniment,

automatic effects (drum rolls!) limited built in recording, and its own speakers. Each of the eight pads behaves like a drum, and you can assign any of the aforementioned sounds to any pad — and like a real drum kit, it comes with a pair of drumsticks that you thump the pads with. Additionally, there's a footswitch which acts like a bass drum pedal (but isn't touch-sensitive). The sounds are surprisingly good, though at this price, you suffer with line noise along with the individual sound.

On the whole, drummers get a bad press, in fact as ace session man Dave Mattacks says, "You're just a hooligan who hits things — unless you're Phil Collins." Now, thanks to the DD-12, you have a chance to join these happy ranks without bothering with the talent

Figure 1



The set-up which goes with this illustration in the Windows sequencer Codenza. Both the main drums and hi-hat are assigned to channel 10 which is received by the drum machine; channels 1, 2, and 3 (piano, bass, strings) are played by the multi-timbral keyboard. In this way you can have four sounds playing at the same time.

another so that, for example, a single musical keyboard can control a number of other MIDI equipped devices — perhaps a sound module and a drum machine (see panel below).

Although MIDI messages appear to be sent and received instantaneously, MIDI is actually a serial communications medium — in other words, all the different bits of information are sent one at a time.

But, if you've got all this information banging down a single line of transmission, doesn't it either get all tangled up, or just become very slow? No, because MIDI side-steps the potential congestion by sending the information very quickly, and turning the serial line into a notional 'highway' with 16 different channels down which the information flows.

These act a bit like television channels in that you can decide which device receives information down which channel by 'tuning' it in. It's a bit complicated, so here's an example. If you look at Figure 1, left, you've got a PC running a sequencer, connected to a keyboard. The MIDI Out from the PC goes to the MIDI In on the keyboard, the MIDI In on the PC goes to the MIDI Out on the keyboard so they can send and receive messages to each other.

— I tell you, this is the most fun you can have with your clothes on. You can even use the eight pads in a half-assed fashion to record a song, and then play along to it.

There are 100 automatic rhythm accompaniments in the DD-12 which you can play along with, and using the 'minus one' feature, you can remove selected drum sounds from the backing track in order to play that part entirely on your own.

Used on its own, the DD-12 simply isn't intended to produce an 'arrangement' in the way the two other conventional keyboards reviewed here are. The way it's set up, it can be set to send and receive on any of the 16 MIDI channels, but because only nine of the internal sounds produce notes (ie, marimba, glock, orchestra hit, and so on) your potential for a full arrangement is quite limited.

However, it has those MIDI ports and will happily control a more sophisticated drum machine like the Alesis SR-16, which is the current pick of the semi-pro drum machines. When connected, you can use the DD-12's pads to play the drum sounds on the SR-16 and record a drum track that way. Alternatively, you can control the DD-12 from another MIDI equipped keyboard, mapping the drums sounds to keys on the keyboard. My mate Richard who runs a professional studio recording songs, jingles, and library music was convinced after 20 minutes with the DD-12, and he's going to buy one, just because it makes it easy to do drum rolls.

Instrument: Yamaha DD-12, electronic drum kit
Supplied by: Yamaha Kemble on (0908) 366700
Specification: Eight touch sensitive pads, 75 drum sounds, auto-accompaniment, MIDI In/Out, speakers
Price: £159.99



Yamaha PSR-300

Five octave keyboard with 100 different sounds (including drums) 50 pre-set rhythms, auto-

accompaniment, single finger chords (where you play a note with the left hand and the keyboard completes the chord for you) its own memory for storing sequences of chords, a sustain switch, a funny feature that automatically adds harmony to the note being played, and its own speakers. It can play two sounds together, you can split the keyboard so that when you play below a certain note you get one sound, and when you play above it, you get another. And it's touch-sensitive which means the harder you hit a note, the louder it sounds.

The sounds are rather mixed. The piano's realistic, so's the mute guitar, the cello the double bass, and the flute. On the other hand, this is least convincing harpsichord I've ever heard, and too many of the others are only sort-of realistic if you can squint with your ears. The drums however, are excellent.

You can use the PSR-300 with a sequencer, of course — indeed, you can play 15 different instruments plus drums at the same time — but it works in a way that's hard to understand at first. Rather than setting it up from the keyboard itself, Yamaha has elected to control all the sounds entirely from the sequencer. This involves using a feature called 'local off' where the synth is essentially put to sleep, and the sequencer takes over control of all its sounds. In order to do this though, you have to set up what are called 'program changes' which actually tell the keyboard what instrument you want to sound on what MIDI channel. This is the way professionals prefer to work because everything's controlled directly from the PC as it's quick and once it's set up, you can store everything away as a kind of instrument 'profile' that can be used again and again. But for the uninitiated, it's a bit complicated to understand and some sort of halfway house where you set the instruments up on the keyboard and then fine tune on the PC would be easier to use.

Still, this is a lot of instrument for your money and the fact that you can play 16 different sounds at once means it can easily be used to produce finished songs at home.

Instrument: Yamaha PSR-300
Supplied by: Yamaha Kemble on (0908) 366700
Specification: 100 sounds, touch sensitive keyboard, drum kit, auto-accompaniment, harmony feature, single finger chords, MIDI In/Out, speakers.
Price: £279.99

The keyboard is then connected to the drum machine by running a MIDI cable from the keyboard's MIDI Thru socket to the MIDI In socket on the drum machine. Thus, messages from the PC can be directed through the keyboard and on to the drum machine.

For the time being, let's assume that although the keyboard has lots of different sounds, it can only play one of them at a time, and that you've picked a piano sound; the drum machine obviously makes the drum sounds. You set the sequencing program to transmit and receive information on channel 1 for the piano (keyboard) and channel 10 for the drums (drum machine). You then set the drum machine to receive only on channel 10, because if you leave it to receive information on all 16 channels, then interesting things will start to happen. For example, when the piano part plays back, the drum machine will try and play the same 'notes' but they'll come out as drum sounds — and for every C or D# or E^b there'll be a thunderous crash on the snare or a flurry of hi-hat.

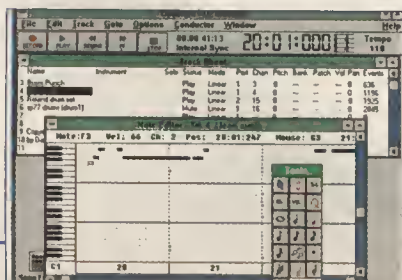
You start to really appreciate how useful channels are when you have a multi-timbral keyboard — one that contains many sounds and is able to play more than one at a time. Upmarket keyboards like the Roland JV-30 can play 16 different sounds at a time (and music snobs don't even count the JV-30, preferring its more powerful big brother, the JV-80); most can play either eight or six. Some of the really cheap ones will play only four.

Here the idea is to assign each keyboard sound to 'listen' out on its own channel so it receives only the information that it's supposed to. For its part, the sequencer on the PC sits waiting for the information from the keyboard or drum machine and then funnels it off to the appropriate channel as it records. The screen in Figure 1 shows Cadenza for Windows set to transmit information to the keyboard on channels 1, 2, and 3 (for piano, bass and strings) while drums sounds (main kit and hi-hat) go down channel 10.

Comet Data 486SX

For this issue, we've done the impossible — upped the specification of the machine we're using, and cut its price. After some

The main elements of Cadenza for Windows — the track list where you set up your instruments and assign MIDI channels; below is the note editor window where you can edit individual notes using the tailbox.



The Comet Data PC, used for this month's music set-up — power at a very reasonable price.

scouting around, we went for a Comet Data 20MHz 486SX with 4Mb of memory, a 64K RAM cache, a 130Mb hard disk, and souped up graphics — more of which later. The whole lot comes with a single 3.5" floppy disk drive, colour display, DOS 5.0, Windows 3.1 and a good, accurate Genius serial mouse. And our system retails at £998.00.

Additionally, the Comet Data has lots more poke on paper than last issue's Twin-head 386SX, thanks to a 1Mb hard disk cache controller which allows you to shift information in and out of the hard disk much faster.

Unfortunately, Comet Data looks like it's also pulled the usual trick that suppliers of very cheap machines tend to do and skimped a bit on the monitor. Thus, despite the fact that the graphics card has 1Mb of video memory and comes ready to run at 1024 by 768 pixels on screen and 256 colours at once, you get a intrusive flicker on the screen. This disappeared when I re-installed the screen driver to 800 x 600 with 256 colours, and overall performance improved.

Monitor aside, the Comet Data did the business — running Big Noise's Cadenza for Windows (the sequencer this month) with ease. The keyboard is of the noisy, clacky kind I like, there are six free expansion slots and ample room for two additional full-height drives. Not the most attractive machine in the world, but proof that a low price doesn't always mean poor performance — just make sure Windows is running at 800 x 600 to get rid of the flicker.

With the money we've saved on the machine we've gone up-market with the software — a powerful Windows sequencer, called Cadenza, from the aptly named Big Noise, stuffed full of good editing features, with an attractive — mostly — intuitive interface, and an innovative and expressive tempo map.

Despite the price difference, Cadenza for Windows (£280.83 including postage and VAT) works more or less the same as Trax, the £69 cheapie we used last issue. Where they differ is in the detailed editing that Cadenza has, its support for high end professional features like SMPTE (Society of Motion Picture and Television Engineers) a fancy synchronisation standard, and the kind of general control that distinguishes a cheap program from an

Contacts

| | |
|---------------|------------------------------------|
| Comet Data | (081) 452 6006 |
| Yamaha Kemble | (0908) 366700 |
| Casio | (081) 450 9131 |
| Cadenza | Digital Music , (0703) 252131 |
| Roland | (0792) 310247 |
| Alesis gear | Sound Technology , 0462) 480000 |

expensive one. To take a small example, the top bar on Cadenza Track List is 'live' — when you move the mouse on to the tempo, time signature, or song position meter, the arrow changes into a mouse icon with a plus on one button and a minus on the other.

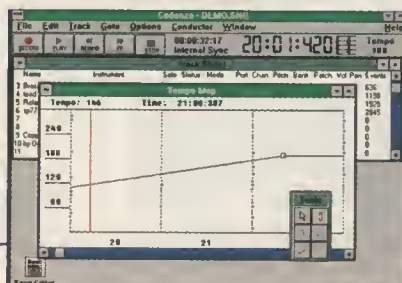
The tempo map is another beauty. As the screen shot shows, it's a graphical way of altering the speed at which a song plays back. You start with a flat line indicating the constant speed of a song, and then literally pick any point in that line and drag it up or down to make it faster or slower. In this way you can introduce very delicate tempo changes to enhance the 'feel' of a song, or use it to 'fit' a piece of music into a specific period of time.

And there's more. Last issue we talked about quantising, where the sequencer can transform a sloppy drum track into a performance that's tighter than a timelock. Well, one of the criticisms levelled against sequencers is that they make the music too perfect, almost soulless. Personally I've always found that by the time you've stuck a guitar or other acoustic instrument on the top and done a couple of vocals, it sounds live enough, but if that's not enough, Cadenza has a 'humanise' feature which lets you introduce tiny timing imperfections into the recording so it sounds like real people sat there and played everything.

In all, Cadenza is a high quality, professional level sequencer for Windows which, despite the lack of score writing, has much to recommend it.

Next month we'll look at the actual information that is sent down MIDI channels, look at another music/PC set-up (this time including score writing) some more instruments, and a couple of low-cost four track tape recorders.

The tempo map — an unusual feature which allows you to increase or decrease the tempo of a piece of music by clicking on the tempo line and dragging it to the desired speed. Here, we've increased it from 110 to 180 in the space of a couple of bars.



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MODEMS AND COMMS

In this series of articles about the PC, hardware and software, we'll be taking you, step by step, through the ins and outs of using, controlling and upgrading your machine.

You'll find out what the PC's components are, how to use them, and how to use your PC software to get the best out of your computer.

Fitting a modem to your PC enables you to exchange information with other computers. Peter Gloster explains what you need to get started in communications.

Modems and PC-to-PC communications are great when they work. You probably use this sort of technology several times a week without thinking too much about it — every time you send a fax, and every time you withdraw money from a cash machine.

Sadly, the simpler things seem in life, the more complicated they often are. PC communications (comms, for short) falls into this category, not because it's theoretically difficult to get PCs to talk to other PCs, but because when you start using modems you go outside the world of clean digital signals that PCs use and into the public telephone system (PSTN). The PSTN was only designed to handle voice messages in an era before even the telex machine was regarded as a pretty snappy way to communicate, and not to transmit the relatively huge amounts of data PC users need to move around.

The basic ingredients

Let's start by looking at all the bits you need to get one PC to talk to another. And when we say talking, we mean able to exchange data along very tightly defined lines. PC comms only achieves one thing, and that's the movement of data from one PC to another. You might want to do this for several reasons — for example, to send some files to a friend or to your office or, perhaps, access a database service so that you can leave messages for other people or collect shareware programs.

There are several links in the chain. First, you need some PC comms software. This does two things: it sends commands to the modem so it knows what to do and, second, it performs the management functions necessary to get the right files sent down the line in the right way.

Next, you need a cable linking your PC's serial port (25-pin or 9-pin, it doesn't matter) to the modem (a 25-pin socket usually marked DTE, for data terminal equipment). At the back of a modem there's a socket usually marked Line — that's where you plug in a smaller telephone-type cable that has a small connector on the modem end and a BT-

style plug on the other (this cable is usually supplied with the modem). You can simply unplug your phone from the BT socket and plug in the modem instead, or get a socket doubler if you want to carry on using your phone as well.

I'd recommend using a modem on a line that goes direct to the exchange (your ordinary home phone line is such a line); you can experience problems with data integrity if you're using a modem through your company switchboard and, of course, nobody can call your modem directly. That completes what you need to make a connection.

Modems

Modems physically come in two types, internal and external. An internal modem will install in one of your PC's expansion

while an external unit requires a bulky AC power adapter. There are also many small, pocket-sized modems around now, designed for use by notebook and laptop computer owners.

A modem from one of the major manufacturers should do the job — you obviously can't go wrong with a genuine Hayes modem, but Miracom and Tricom also produce good units. If you're looking for a small portable modem, those in the Dataflex and WorldPort series have an excellent reputation.

A computer represents data characters by eight bits, which make one byte. Each bit consists of ones and zeros, and a modem takes this data and transmit it across the PSTN to another modem. It does this by taking these ones and zeros and modulating them, that is, turning the zeros and ones into analogue tone signals that match the audio capabilities of the telephone system (roughly 300Hz to 3,000Hz) for transmission along a phone line, then, at the other end of the line, demodulating them and turning them back into binary data. Each bit produces one signal.

To send the ones and zeros, the transmitting modem puts either a space (0) or a mark (1) signal on the line. To let the receiving modem know that a new data packet is being sent, each data character has a start bit prefixed to it, and at the end a stop bit (slower speeds sometimes use two stop bits). Before the stop bit, there's sometimes another data bit called the parity bit; this crude error-detection method adds one bit to the data character so that the number of one bits is even (or odd), but is less widely used nowadays. Ten bits is the usual size for a transmitted data character. Comms software will often report the speed in characters per second that a transmission has achieved when you're sending or receiving files.

The trouble is that the phone line doesn't have much bandwidth to play with (that is, it doesn't have the capacity to send that many signals per second). The PSTN has a usable capacity of about 2,400 baud, or signals, per second and, given that modems need to send data in both directions at the



Modems come in various shapes and sizes. Top: a standard sized external modem, the Dowty Quattro and above, the Dataflex Pocket modem range, useful for laptops and unobtrusive comms.

slots, while an external unit is a slimline brushed metal or plastic box. It's often designed so that you can sit your ordinary telephone on the top. There's no particular advantage to either model; an internal modem takes up an expansion slot,

same time, this means that it becomes difficult to get speeds of more than 1,200bps. To achieve data transmissions at higher speeds, modems have to use very advanced modulation techniques to cram more data down the line. It's for this reason that there's a difference between baud rates and bits per second (bps): the baud rate is fixed at the capacity of the phone line, but not bits per second.

The earliest modems worked at 300bps and, in the early days of PC comms, there were two data transmission standards, one developed in the US by Bell, the other used in Europe and based on CCITT recommendations. Eventually the CCITT won out, and it now approves all international data standards. Its standards are prefixed with a V.

After 300bps (V.21) came 1,200bps (V.22) modems, and then 2,400bps (V.22bis) modems. Although a standard for 9,600bps (V.32) was agreed in 1984, it took manufacturers several years before they developed modems that implemented the technology. Before this, manufacturers had adopted their own proprietary solutions to performing transmissions at this speed, so you had to use a pair of modems from the same manufacturer.

The latest standard is V.32bis, which is for modems communicating up to 14,400bps; another standard, currently nicknamed V.FAST and not yet agreed, should provide for modem speeds of at least 24,000bps and perhaps up to 28,800bps. This high speed is partly the result of the widespread switch across Europe to digital telephone lines, which have a slightly wider usable bandwidth (all major exchanges in the UK now use digital lines), but this figure more or less reaches the absolute limits of transmission speeds.

A fast modem can communicate with a slower modem — after all, one modem doesn't know what other modem it's connecting to. If, for example, a 9,600bps modem connects with a 1,200bps one, or if two high-speed modems connect and line conditions are bad, they will automatically "fall back" to attempt and maintain a connection at a lower speed (4,800bps, the 2,400bps, then 1,200bps and finally 300bps).

In addition to speed ratings, there are other V numbers you should look for in a modem. V.42 and V.42bis relate to error correction, a method of maintaining a reliable data link between two modems, and are too complex to examine in detail here. V.42bis is the more recent standard and improves on the speed of V.42 by adding data compression. This speeds up effective data throughput rates, sometimes by two or three times, so that two 9,600bps modems with V.42bis should easily be able to achieve 19,200bps during a connection (your modem usually issues a message telling you what speed you've connected at).

Another error correction method also appears in many modems, but it isn't a CCITT recommendation — MNP stands for Microcom Networking Protocol. MNP level 4, like V.42, provides error correction, while MNP level 5 adds data compression as well. The ideal combination then is a V.32 or V.32bis modem with V.42bis and MNP 5.

It isn't difficult to suggest what modem to buy: the fastest you can afford. While faster modems mean a higher initial outlay, long-term they mean lower phone bills. A 2,400bps modem is the sensible minimum, but remember that a 9,600bps V.32 modem is about four times as fast when

uploading and downloading files.

A word of caution: wherever you use your modem in the UK, it must be BABT-approved, like telephones. There are cheaper non-BABT-approved modems around, but it's illegal to use them and remember that they won't necessarily meet all the safety regulations — look for the green BABT-approved blob.

AT commands

There's one more essential thing to look for in a modem — it must be Hayes compatible. One company that perhaps more than any other has contributed to making PC comms more manageable is Hayes Microcomputer Products. Its founder Dennis Hayes helped originate a new way of controlling a modem by issuing commands from a PC — using the AT command set — rather than the then current and cumbersome method of changing modem settings by means of DIP switches. The first modem using this method, the Smartmodem 300, appeared in 1981.

AT stands for 'attention' and is a way of switching the modem between an online mode to a command mode, when it will respond to instructions from the PC it's attached to. Sending AT followed by other character strings allows you to control a modem in the most intricate ways.

In some cases, the commands are quite simple. For example,

```
ATDT081 399 5252
```

tells the modem to use tone dialling to phone the CIX BBS (bulletin board service) on (081) 399 5252. If you've got a blank screen in front of you when you start your

CompuServe and CIX

CompuServe is a BBS that is based in the US but has local access points, so that, in the UK, you call a London phone number and don't pay for a Transatlantic call. It's one of the biggest BBS in the world and you can reach other BBS round the world through 'gateways', for example, in Taiwan, Japan and Venezuela. You can get membership and charging details on (0800) 289378; what you pay depends on the speed at which you access CompuServe — at 1200/2400bps, it's \$12.80/hour, at 9,600bps \$22.80/hour. If you connect to CompuServe at times other than from 19:00 to 08:00 weekdays and at weekends, there's a \$7.70/hour surcharge. A membership kit, priced at £22.95, includes CIM comms software and manuals, a temporary ID and free \$25 of usage.

However, you can operate CompuServe, like any other BBS, from your comms software. Once you've got used to its slightly weird command structure (numbered menus and Go commands), it's fairly easy to get around. Its range of services is huge, from a mailbox service, to share quotes, news summaries from Associated Press Online, access to American Airlines reservation system and film reviews; there are forums on everything you can think of.

CIX (which stands for Computer Information eXchange) is based in Surbiton, Surrey. Like CompuServe, there are numerous and lively conferences, huge numbers of files to download and plenty to browse through.

If, for example, you're logging on to CIX for the first time, you type CIX at the Login: prompt and then NEW for new user. After that, the BBS software takes you through the registration

procedure (you'll need a credit card number handy) and invents a nickname for you (which you can change). You'll find it difficult to get on to CIX at 'peak' times — that's the early evening when lots of people are logging in after a day at work.

CIX, at Suite 2, The Sanctuary, Oakhill Grove, Surbiton, Surrey, KT6 6DU, can be contacted by voice on (081) 390 8446. It's got a total of 76 lines, mostly 2,400bps (Tricom modems on (081) 399 5252 and (081) 390 1244), but also Hayes Ultra 96s on (081) 390 9787 and Courier HSTs on (081) 390 1255; all lines have MNP 5.

Once you've registered, type "qlx" instead of "clx" at the login prompt. Use eight databits, one stop bit and no parity otherwise CIX won't talk to you! It's recommended that you use Zmodem for file transfers, or perhaps Ymodem (it's Ymodem Batch), rather than Kermit or Xmodem.

After you've logged in, you see the following information:

```
CIX Version 1.400 8/6/92
Copyright (c) CoSy Conferencing System, University of Guelph,
1984 Portions copyright (c) Compulink Information eXchange
Ltd, 1985-1992 You are on line: ttyqx
Nickname? (Enter 'new' for new user) pgloster
Password: *****
```

You enter your CIX name at nickname (it invents one for you after registration), then your password. After this, you'll get some information on the status of your mailbox and whether there are any mail messages waiting for you.

You can also send a message to PC Review at CIX: our nickname is, uncannily, 'pcreview'.

comms program, the chances are that you can start typing in commands like this.

A simple command to make sure your modem is working properly is to type AT (Enter); the modem should come back with the message OK. Typing ATZ resets the modem to its factory-set default values.

However, the AT command set is extremely complex and alters the internal settings of the modem, many of which have a bearing on achieving and maintaining a reliable connection. I keep well away from anything complex, and I'd advise you to do the same unless you're an electronics engineer with an intimate knowledge of

telephone lines. You shouldn't usually need to use these commands if you've set up your program properly, because your software should translate your commands into AT commands to the modem.

Making the connection

Now we've dealt with the hardware, there's the software to consider. There's a good selection of comms programs around, and some modems come bundled with a comms package. However, two packages that deserve special consideration are Procomm Plus and Hayes Smartcom Exec.

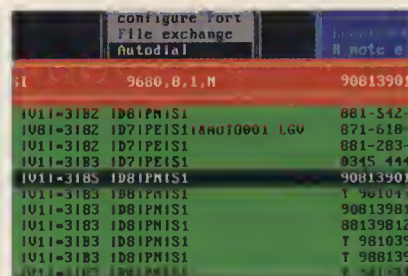
Procomm Plus has always been a favourite of modem users because it's almost infinitely configurable and, more importantly, it tends to work. It's available in two versions, a recently upgraded DOS version and a new Windows version. A program with many of the same merits as Procomm, and also recommended, is Odyssey.

Smartcom Exec (and Hayes' other more advanced Smartcom comms packages) offers outstanding performance when used with a Hayes modem, which is not surprising since they're from the same source. However, the program interface is slightly complex and confusing — it's worth the hassle only if you've got a Hayes modem. Hayes expects to launch a Windows version of the program in September.

After installation, you first configure your comms program by telling it what modem you're using — most common makes are catered for with preset configuration details supplied, which takes most of the hard work out of setting up. If you do have to set a program up manually, you'll need to set parameters such as communication speed, so set this to 2,400bps if you've got a 2,400bps modem, for example. Importantly (don't be a dimwit like I've been sometimes!), make sure your program knows which serial port your modem is attached to (usually COM1 or COM2).

The guts of a good comms program is its dialling directory. As its name suggests, a dialling directory is a list of phone numbers (see the screenshot of Procomm Plus for Windows) you use regularly, plus relevant settings. You simply highlight the entry and the program sets the modem to dial the number.

Those are fine words and I've got to come clean here. Getting a modem to work properly requires infinite patience. Sometimes they work first time, sometimes they mess you around for ages before everything goes just right. If you think I'm going to get technical here, you're wrong, because you should let the program do all the work in changing the settings. If your modem doesn't work, check the obvious things like the physical connections of the cables, that you've got them plugged into the right sockets.



Most comms software operates on a menu-selection basis for easier file transfer.

When you start to dial a number, you should hear your modem burst into life with a dialling tone, and some of the lights on the front light up. You'll hear your modem dial (either tones or pulses, depending on how it's set up) and then a ringing tone, just as if you were calling up on an ordinary phone. If the other line is busy, you'll get a message to this effect from your comms software.

If the call is answered (by another modem), you'll hear a dreadful, wheezy row as the two modems attempt to establish a connection (similar to the noise a fax machine makes). This process is called handshaking — the two modems are sorting out what speed to talk at and negotiating what other protocols to use. At this point, the connection usually falls silent (after all, you don't want to hear the modem during the connection, although you can use an AT command to keep the sound on).

At this stage, you'll start seeing something else on your screen, the other

WHAT TO BUY



The Miracom Courier includes MNP 5 error correction.

Here are some sample products and prices:

Software

Hayes Smartcom Exec 2.1: £79
Procomm Plus 2.01 (DOS): £89
Procomm Plus for Windows: £99
Odyssey 1.50: £89

Hardware

2,400bps modems (V.21, V.22, V.22bis)
Hayes Smartmodem 2400 Quad (£299-£315) (external)
Hayes Ultra 24 with Express 96 (£357-£399) — Includes V.42bis (external)
Miracom Courier 2400e Quad (£395) — Includes MNP 5 (external)
Miracom Courier 2400 V42bis (£445) — Includes MNP 5 (external)
Tricom Tempest PC Quad (£349) — Includes V.42, MNP 4 (Internal)
Tricom Tornado 5/42 (£599) — Includes V.42, MNP 5 (external) Worldport 2400 MNP5 (£345) — Includes MNP 5 (pocket-sized)
Dowty Quattro; (external), includes MNP5, (£795)

9,600bps modems (V.32)

Hayes Ultra 96 (£549-£595) — Includes V.42bis and MNP 5 (external)
Miracom Courier V32 (£595) — Includes V.42bis and MNP 5 (Internal/external)
Tricom Tornado 10/42 (£899) — Includes V.42bis and MNP 5 (external)
Worldport 9600 MNP5 (£575) — Includes MNP 5 (pocket-sized)

14,400bps modems (V.32bis)

Hayes Ultra 144 (£635-£680) — Includes V.42bis and MNP 5 (external)
Miracom Courier HST Dual Standard (£895) — Includes V.42bis and MNP 5 (Internal/external)
Tricom Tornado 14/42 (£899) — Includes V.42bis (external)

GLOSSARY

Bandwidth: The range of signal frequencies that can be carried by a communications channel.

Baud: A measurement of the number of signalling elements per second; the limit on the PSTN is about 2,400 baud.

Bps: Bits per second, for high-speed modems, is usually a simple multiple of baud. Typical figures are 1,200, 2,400 and 9,600bps.

Byte: A group of (usually) eight bits, used to represent one character of data.

CCITT: These initials stand for Comité Consultatif International Téléphonique et Télégraphique, a committee of the International Telecommunications Union, an agency of the UN, which is responsible for all data transmission matters. It's the international organisation where worldwide communications standards are agreed.

Data compression: A way of making data take up less space; compressing data by using mathematical algorithms provides faster

overall transmission speeds (and cuts phone bills).

Duplex: There are half-duplex and full duplex communications channels. On a full duplex channel you can transmit data in both directions simultaneously; a half-duplex channel allows data transmission but one in one direction at one time.

Error correction: A method, defined by a particular protocol, of decreasing errors in the transmission and reception of data due to noisy phone lines. This service can be provided either by the communications hardware or software, but it's more efficient if implemented in hardware.

Protocol: A set of rules governing the flow of information in a communications system. Also known as Data Link Control.

MNP: This stands for Microcom Networking Protocol, invented by

FIRST STEPS WITH THE PC



The Packet Stradcam from Dataflex.

machine you've connected to, another PC or a BBS. From then on, you're on your own: your modem has done its job, now you've got to tell the software what to do.

You can also set your modem up to accept incoming calls (host mode), just like a mini bulletin board. Another person simply dials up your PC and logs in (you can set a simple password). For example, when I leave the office, I leave my PC in host mode — I can then dial it up from home and pull files off it or send files to it for my colleagues to use. Most comms programs let you set up your modem as a host — for this, it needs to go into auto answer mode, a feature that is ordinarily disabled.

File transfers

Whatever you're now logged on to, you'll probably need to do a file transfer. This will consist either of sending files to someone (an upload) or receiving files from the other machine (a download).

You'll need to get your comms program

to start an upload or download, and to specify which file transfer protocol is to be used (unless you've specified a default protocol to use during installation). These software-based protocols handle the packaging and transferral of data and act in conjunction with any error-correction that modems may have built in (such as V.42 and MNP 5). They try to ensure that what is sent out by your comms software is the same as what is received at the other end. It's not just between modems, but between your PC and modem that you can lose data, since data can become corrupted on its way to or from your modem (see box on Hayes ESP). The three most common file transfer protocols are Xmodem, Ymodem and Zmodem.

Xmodem is one of the most common, but it'll slow down your file transfer speed dramatically, partly because it uses small 128-byte packets of data. But it's the best file-transfer protocol to use with older, slower modems, such as 300bps, 1,200bps and 2,400bps units without MNP or V.42. It's still the default setting for file transfers for many BBS.

Ymodem is faster, because it's a streaming protocol and just feeds through an uninterrupted flow of data, but it doesn't have any error-correction; if a transfer fails, you'll have to start over again.

The best protocol is Zmodem because it's fast and allows you to resume an interrupted file transfer and it's good at recovering from errors. In conjunction with an MNP 5 or V.42/V.42bis modem, this is the best.

During the transfer, you may see the transfer seemingly grind to a halt with messages like NAK (Not Acknowledged) packet; this means that the receiving modem has detected a corrupted packet. The sending modem has to resend that data packet before the transfer can move to the next data packet (the data packets must be sent sequentially, and the receiving modem reconstructs them into a file).

What's a BBS?

I've mentioned Bulletin Board Service already. A BBS is a sort of electronic messaging service cum database cum chatline. Two of the most popular are CompuServe and CIX, but there are many others, often run by computer enthusiasts. There are also commercial services you can dial up, and many companies have areas on BBS where you can leave or read technical support messages (particularly modem manufacturers).

You can log on to any BBS as long as you know its number and what basic communications protocols it uses. Typical ones are 8-N-1 (eight data bits, no parity bit, one stop bit) or 7-E-1 (seven data bits, parity even, one stop bit; this is more common for BBS in the US). In general, you pay a flat monthly fee (for renting a mailbox), plus an additional fee charged on an hourly basis

depending on how long you're connected. However, rates vary from BBS to BBS and you're advised to check before you sign on to one. As an example, my CIX account costs me about £7.50 a month, but I don't use it for much other than as an electronic mailbox. Remember that you're also paying your own phone bill!

If you're a new user, you'll have to register before you're allowed access (keep your credit card handy), then sign on with your name and, of course, enter a password so that other people can't rack up charges on your account. After that, it depends on the BBS but you will have access to several similar sorts of 'areas'. These typically include an electronic mailbox service where you leave messages or files (and where people can do the same to you), a file area, where there are lots of often very useful files to download and, finally, an online chat service where you 'talk' with other people about whatever subjects take your fancy. The subjects covered? Well, obvious ones like politics, hobbies and business issues, but really just about anything you could conceivably be interested in, including serious, lighthearted and adult themes.

The chat services are called conferences or forums and you must request to join a conference (usually no problem). However, certain conferences are closed, perhaps they contain company-confidential information, or are solely for the use of a specific interest group.

I mentioned files, and there's usually much interest in obtaining 'free' software. While there is usually much software available — for every purpose from calendars to games to mini word processors to Windows utilities — bear in mind that much of it is shareware. That means you have a sort of trial version; if you like it, you're asked to pay a small registration fee, about US\$20 to US\$30 (most of it is from the US), usually payable by credit card.

modem maker Microcom to get around the problem of poor quality phone lines by building error-correction into the modem hardware. If both modems involved in a transfer had MNP built-in, error correction would take place invisibly to users. The two important MNP levels were 4 and 5; level 5 added data compression techniques, which provides higher effective data throughput rates.

PSTN: Public Switched Telephone Network, in other words the public telephone network we connect to every day for voice calls. In the past, telephone exchanges used analogue switches, but, whatever your grumbles about BT, every major exchange in the UK has now been converted to digital and we're well ahead of every other country in Europe. There are two advantages to this: first, you can use touch-tone dialling, which is far faster than the old

pulse method (which older, rotary-dialling telephones all used); second, the lines are much cleaner.

V.21: CCITT standard for 300 baud modem for use on the PSTN.

V.22: CCITT standard for 1,200bps full-duplex, two-wire modem for use on the PSTN.

V.22bis: CCITT standard for 2,400bps full-duplex, two-wire modem for use on the PSTN.

V.32: CCITT standard for full-duplex, two-wire modems operating at data signalling rates of up to 9,600bps on the PSTN.

V.32bis: CCITT standard for full-duplex, two-wire modems operating at data signalling rates of up to 14,400bps on the PSTN.

V.42: CCITT standard for a packet-based error-correction protocol for modems.

V.42bis: CCITT standard for a packet-based error-correction protocol incorporating data compression, offering up to three times the data throughput of V.42.

Contact numbers

| | |
|------------------|-----------------------|
| Dataflex | (081) 543 6417 |
| Datastorm | |
| (Procomm) | (0223) 421606 |
| Dowty | (0635) 33009 |
| Miracom | (0753) 811180 |
| Micropack | |
| (Odyssey) | 0224 631100 |
| Tricom | 0494) 483951 |

| | |
|--------------------------------|-----------------------|
| Hayes Online Europe BBS | (081) 569 1774 |
| Miracom BBS | (0473) 232540 |
| Tricom BBS | (0494) 485269 |

| | |
|-------------------------------------|-----------------------|
| Hayes modems: | |
| Hayes Microcomputer Products | (081) 848 1858 |
| Decisionware | (081) 392 2213 |
| UK Com | (0273) 208423 |
| Vogue | (0923) 222243 |

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For a long time multimedia has been perceived as little more than a buzzword for expensive hardware and software add-ons beyond the reach of the majority of users. Things are beginning to change however as the Creative Labs range of affordable audio, video, CD ROM products and software/hardware accessories become more and more established as the preferred choice of business and home users of personal computers.

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traditional PC into the dynamic realism of sound, graphics and animation and includes Sound Blaster Pro, a high performance CD-ROM drive and 5 CD-ROM titles including Multimedia Windows for less than the price of many CD-ROM drives alone. Video Blaster is a full motion digital video card allowing you to combine video and audio resources from laserdisk, VCR's and cameras and overlay them with VGA graphics.

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PLEASE SEND FREE INFORMATION PACK: NAME

Three of the most eagerly awaited games of the year have turned up this month: *Indiana Jones and the Fate of Atlantis* and *Jimmy White's Whirlwind Snooker* have both blown our socks away, and *Aces of the Pacific* finally takes to the air. Check them all out on these pages...

● Alternatively



We believe games should be placed in context. If you like the sound of *Global Effect*, for example (see page 56), you'll be interested in other games of a similar style. In all our major reviews, we offer comparisons with other titles, some of which may be more suited to your tastes.

● Hardware requirements



A succinct and precise list of the hardware features required by each game. If you need to know how much hard disk space a game will take up and how many floppies you'll find in the box, this is where to look.

Our no-messing, no-guessing guide to the hardware supported by the game tells you exactly what graphics and sound cards are supported. And if there's anything unusual about the specs, or any additional information, we'll note it along with the hardware requirements.

● Two minutes



The Two Minutes panel is the nearest thing to seeing the game in action, as we take you through selected screens and note the gameplay required.

You'll find our reviews concentrate on the atmosphere generated by the program and the gameplay involved, rather than regurgitating reams about the background story. You can always read the novella when you buy the game – our job is to help you decide whether you want to buy it in the first place.

● Our rating system



We're as fed up as you are of over-complicated rating systems that mark everything from packaging to intro sequences and tell you nothing about the real quality of the game. That's why we've made our rating system simple and consequently useful. We give a single mark out of 10, based on the game's overall quality and how enjoyable it is to play.

You'll find the marks in PC Review are frequently not as high as in some computer games magazines. This is deliberate – not everything is worth the equivalent of 80 per cent. As a general yardstick, anything which gets more than five is, in our opinion, an above average game; seven is good, and eight or over is excellent.



The man with the hat is back in his best adventure to date. Read all about Indiana's latest exploits on page 40.

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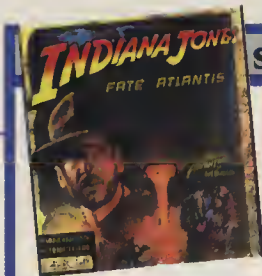
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A quick round up of everything that we promised you last month but failed to deliver due to circumstances beyond our control.



SOFTWARE REVIEW

- Indiana Jones and the Fate of Atlantis
- Lucasfilm/US Gold
- (021) 625 3366
- £37.99

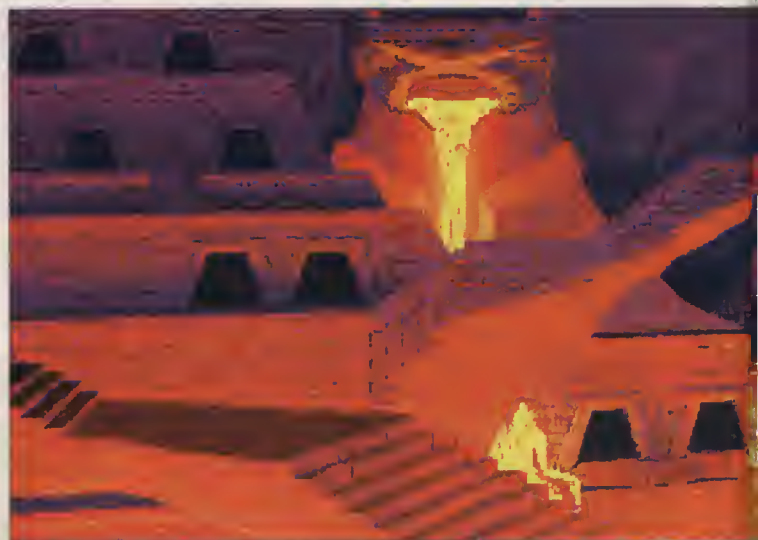
There are currently two Indiana Joneses running around. On the one hand, we have the Harrison Ford/George Lucas/Steven Spielberg version, a serious minded, quick-witted, scholarly type, who isn't afraid to take chances, to use his fists as well as his brains and to put it all on the line to stop the bad guys. On the other, we have the Indiana Jones found in the computer games, an oft-times hapless participant in globe-spanning adventures, the butt end of many a humorous situation, never afraid to make a fool of himself, to put his fists ahead of his brains and to put it all on the line to stop the bad guys. Even when based on a film, the character you play in an Lucasfilm adventure is more reminiscent of a Saturday morning cartoon character than the unshaven, rugged Mr Ford.

This is even more apparent in Indiana Jones and the Fate of Atlantis, mainly because in this latest episode, the man with the hat has become the men with pens. There is no film to compare it to (and if Mr Ford is to be believed there will never be another film to compare it to — shame) and so it's been up to Hal Barwood and his team of game designers to further Indy's adventures, meaning that this game will ride and fall on its own merits.

Right from the start, from the moment the Indiana Jones logo zoomed on to the screen and Indy swung into the picture, I got the overall impression that this time round I wasn't going to be disappointed. I must confess to being one of the few people unimpressed with Monkey Island 2 when it first appeared, much preferring Guybrush Threepwood's earlier outing to the big-budget sequel, and, as such, I was expecting Fate of Atlantis to fall into exactly the same category. Thankfully I'm happy to be wrong.

Although it's not based on a film, there are certainly plenty of times when you feel it could have been. Take the opening credits, for instance. You start in a dusty old room full of statues, the logo blazes on to the screen and the initial credits start rolling. After four or five names go by, you get control of Indy and start to wander around. One statue causes you to fall through to another room, knocking you out momentarily and allowing for more of the credits to pass by. This then continues for three or four more screens, really giving it that film-like feel.

It's not just cinematic styles and gimmicks either. Extremely clever touches crop up every time you turn a corner. Walk into an area without light and obviously you're not going to see a



The world's favourite archaeologist is back and this time he's going for a swim

great deal. Wait around a few moments though and as your eyes start adjusting to the dark, so the screen starts to brighten up. It's a very gradual process and you probably won't notice it unless you're actually watching for it, but it's a very good example of the amount of thought and attention Lucasfilm has put into the game.

Sound of music

The iMUSE music system is also back for its second outing and this time it's used a lot better than in Monkey Island 2. The whole point of iMUSE is that the music follows the player, adapting itself to suit the situation on the screen. In Monkey Island 2, while the music itself was all very nice, you could often force the changes by moving from one part of the screen to the other. To be blunt, you could see the joins.

Now with the Indy music, it doesn't move around quite so much. It's a lot harder to see where one score ends and the





Indiana Jones and the Fate of Atlantis

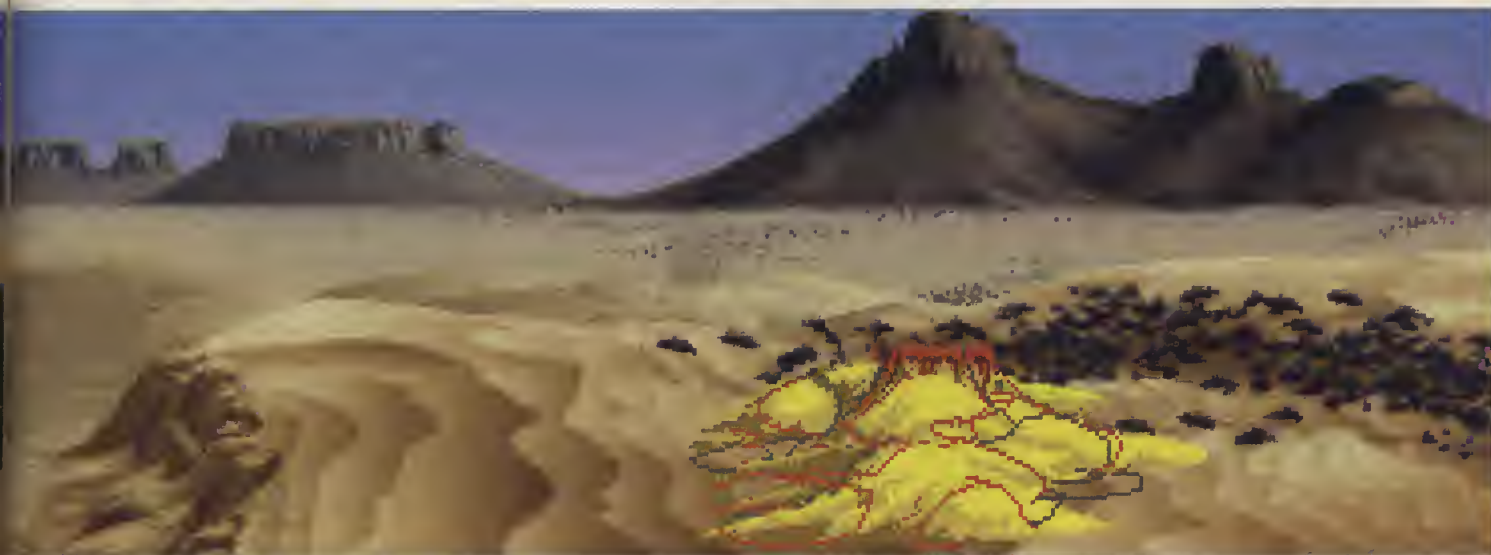
next starts: in brief, it works a lot better. Plus, I have to admit, I absolutely love the Indiana Jones theme and listening to it through a Roland soundboard was just an immense pleasure. The message is simple: if you haven't already got a sound board, get one now!

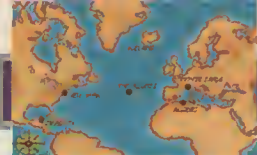
But what has searching museums for old statues got to do with Atlantis? Well, in the true tradition of Indiana Jones, this is no small task lying ahead. The Nazis (what Indy adventure would be complete without Nazis — except, perhaps, for The Temple of Doom?) have unearthed evidence pointing to the whereabouts of the mythical underwater empire and are keen to harness the obvious power of these technologically

advanced beings for their upcoming European vacation.

Having sent spies into America to track down whatever Atlantean artefacts they can find, the trail leads to Barnett College, home to one Doctor Henry Jones (Junior). Finding the statue in the game's intro sequence, Indy hands it to a disguised Klaus Kerner, officer in the Nazi's SS, to discover a small bead hidden inside. Remembering that the statue was discovered on the Jastro Expedition (Indy's first archaeological dig), he sets off for New York to try and find his partner on the dig, Sophia Hapgood. Once reunited, they discover that the Nazis are close to discovering Atlantis and so set out to stop them, save the world and discover the true Fate of Atlantis once and

Laaks like paar Indy's been well and truly deserted by Sophia. With the lady gone, his ego is going to be as deflated as his ballaon. In fact, paar Sophia has slipped into a hole in the excavations and Indy's got to find a way to get her out. While he's exploring he may well find one or two clues to the location of Atlantis. Then there's the problem of getting out of the desert. That truck looks like a suitable mode of transport, but it's been abandoned because the engine isn't running. What are you going to do about that, eh?





In the city that doesn't sleep, Indy is getting all fired up because he can't get into the theatre where archaeologist-cum-psychic Sophia Hopgood is entertaining an audience with her Last Worlds of Atlantis lecture. Even once he's inside he'll need to get switched on if he's going to stand any chance of finding a way of attracting Madame Sophia's attention.

for all. Arks of the Covenant, Holy Grails, Atlantis? What's next for Indy I wonder. The Bermuda Triangle? The meaning of life? The place where all the biros disappear to whenever you put them down?

As most Lucas-philes will recognise, the SCUMM (Script Creation Utility for Manic Mansion) system is used for the majority of the game, albeit in an updated form. Instead of pure text, there are now graphic icons representing the objects and the whole display has been 'tarted up' (for want of a better phrase). Ever since Manic Mansion, SCUMM has been one of the most popular and user-friendly systems to ever appear in a computer game, surprising when you think how everyone is turning away from text-displays and towards wholly icon-driven point 'n' click systems. Even so, SCUMM still knocks the others into submission.

What makes it so good (as well as the game as a whole) is the fact that Lucasfilm hasn't relied on it throughout and certainly isn't afraid to adapt, change or even drop it altogether for certain sections of the game. Walk into an unlit area and the 'look at' command is replaced with 'touch' (and yes, if Sophia is with you, you can touch Sophia ... she isn't too happy about it though).

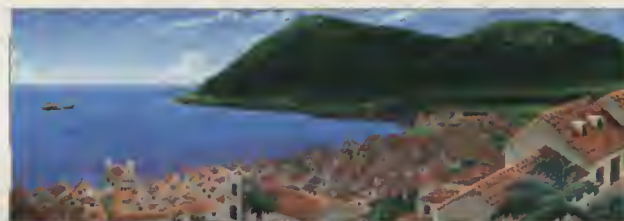
A piece of the action

Even though it's an adventure game through and through, you couldn't have an Indiana Jones story without a fair amount of action and there are thrills and spills to be found everywhere. What's nice is that these areas blend so well with the rest of the game you hardly notice that you are suddenly using a completely different control system, thinking it all is one big exten-

sion of SCUMM.

The action sequences themselves act to break up the scenes. Whether it be a simple fight with a Nazi guard in the depths of Atlantis or a car chase through the streets of Monte Carlo, it happens just often enough to provide plenty of variety in the game and not to make you groan every time 'yet another arcade section comes along'. Lucasfilm hasn't fallen into the Heart of China trap by allowing you to skip the action segments completely (although they are reduced if you choose to take the wits route), giving the feeling that it's all part of the story. Besides, none of them are particularly challenging and it's not going to take you long to master them (and I was disappointed that I couldn't find any sign of the 'sucker punch' option in the fight scenes).

For all its cinematic quality presentation, I would, to be honest, have a hard time seeing this particular plot up on the silver screen. For one thing, there tends to be a little bit too much needless travelling (one puzzle in particular requiring



Off to the sunny Azores now, but not for a holiday ... this trip is strictly business; find out as much about Atlantis as you can.



TWO MINUTES OF STOCKTAKING

In true Indy style, Fate of Atlantis starts with our hero in the thick of things. Crashing through a window into a room full of dusty artefacts, Indy has to find a particular statue.

After searching most of the other junk in the room, one odd-looking statue in particular catches his attention. Suddenly, it triggers a trapdoor beneath his feet and down he goes.

Recovering from the fall, Indy finds himself in an old library. Seeing a rope dangling through a hole, he stoops over to pick it up and is clobbered by a falling statue.

After coming round again, he finds himself in a more modern library (modern for 1938). Unfortunately, one bookcase proves a little bit too loose and down he goes again.



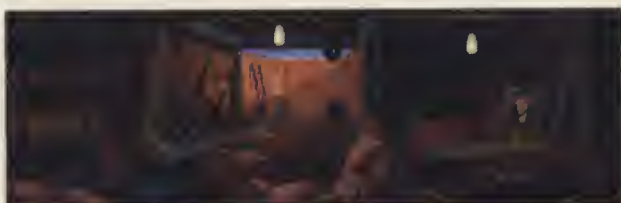


Out in the jungle a new set of problems present themselves to Indy. How does he get across that gap for one thing? That tree has possibilities, but there's a bloody great Boo Constrictor wrapped around it, and you know how Indy feels about snakes. Maybe that overgrown rat has an idea that might help, because Sophia is looking most uncooperative at this particular moment.

you to travel from one continent to the other just to pick up a single object, then travel all the way back again to make use of it). Also, as I said earlier, the characters are often more like cartoon characters than the established Indiana Jones cast we've come to expect in the films.

Still, it's not a film and probably never will be. For a game, the characters are just perfect, the puzzles are well balanced and the overall feeling of quality is kept up right to the end (something that a lot of games overlook, never expecting you to reach that far).

If there is a problem, then it's the same one that affects most of the Lucasfilm games. It is a little easy to complete, despite the multiple plot routes. I'm not questioning the longevity: as was the case with *The Last Crusade*, it is a lengthy game and you're more than likely to get your money's worth out of it. It just never really throws up a terrific challenge. There are tricky problems to solve, but they're not the type to keep you stumped for weeks on end.



These excavations in the desert south of Algiers hold some vital clues as to the whereabouts of the Last City of Atlantis, so get digging ...

Even so, they are a bit — how shall I put this — lateral at times, with some extremely dodgy solutions that you know you would never see on film. Using an old wad of chewing gum for traction, for instance. Or a plunger to control a ... well perhaps I'm giving too much away. It doesn't happen often, but that just tends to make it more apparent when it does.

Balancing these irregularities is the fact that for once in an adventure game, there actually are multiple solutions to quite a lot of the puzzles and that the different routes really are different. It's not often you can say that about a game as the term 'multiple solution' often means that you can use either a wooden stick or a metal pole to plug a gap. Here it means that, while the settings are usually the same, the actual plot differs wildly. Taking the 'fists' route means that once you find the Nazi digging site, you realise you'll have to go back to Monte Carlo to rescue a friend. This also involves the obligatory car chase. Taking the 'team' route on the other hand means you don't go anywhere near a car chase and you never find yourself rescuing anyone until you reach Atlantis (and even then it's someone different).

If there is a problem with it, it's that I would love to have seen the multiple stories continue through to the end of the game instead of converging together and becoming the same once you reach Atlantis. If this had been the case, then I really would have wanted to play each path again. As it is, I'm having a bit of trouble dragging myself back to finish the fists route knowing that the end result is just going to be the same.

There are also a lot of cases of randomising involved throughout the game. Each time you play, you'll have to locate a different museum collection to find Plato's lost dialogue

Happily the floorboards gave way, allowing for a narrow escape. A series of cat statues prove to be of interest, until one of them turns out to be real.

Falling down the coal chute (it simply isn't his day, is it?), Indy finds himself in a boiler room. Three lockers attract his attention and one of them reveals the statue.

Carrying the statue swiftly back to his office, Marcus Brody is waiting with a mysterious Mr Smith. Handing over the statue, Smith reveals he has a key to open it.

Inside the statue is a glittering bead of gold, about the size of a marble. What can it all mean? Who is the mysterious Mr Smith? And why does he speak with a German accent?





The problems get a littler deeper on board the Nazi U-Baat. The reason that guord is looking o little pole is that Sophia has just had her evil way with him. Sa Sophia hos been liberoted, but how da you cantral this damned machine. You won't get to Atlontis until you've learned haw ...

(involving different puzzles), the entrance to Atlantis will be in a different place each time, the combination of the sunstones will change from game to game. It's often just the most menial of situations that differs but it does make you feel as though the game you're playing is your very own version (plus it means that printing a solution in our QED section isn't going to be easy).

But despite the slight problems with the overall difficulty (or lack thereof), Fate of Atlantis is simply brilliant. I can honestly say I haven't really enjoyed playing an adventure game as much as this since Indiana Jones and the Last Crusade. OK, so I consider the whole Indiana Jones genre one of the finest to ever appear on the silver screen and if there are bigger Indy fans than myself, I've yet to meet them. But I'm sure that most of you would agree, of all the film licences that have ever been produced on a computer, the Indiana Jones line has certainly been the strongest. It's a shame that the rumours of Lucasfilm troubles (the loss of several key members of staff, as well as the actual SCUMM system itself) are so strong. With the whole Star Wars series to fall back on, it would be a shame if we were never going to see Luke Skywalker and Han Solo being told to 'Walk to millennium falcon' and 'Use light sabre on Darth Vader'. It's also a shame that so many other films don't get this kind of treatment on the computer. Once again, Lucasfilm is leading the way, with a triumph of game design, story-telling and out-and-out playability. Sigh. If only all film licences could be done this way.

PAUL PRESLEY



REQUIREMENTS

Firstly you'll need around 10Mb of free space on your hard drive and around 540K of base RAM free to fully enjoy Indy. The iMUSE system will require a soundboard of some description and obviously there's nothing quite like the Raiders March heard through a Roland.



ALTERNATIVELY...

Indiana Jones and the Fate of Atlantis — The Arcade Game

US Gold, £29.99

US Gold's other attempt to cash in on the adventures of the world's greatest archaeologist is a very different cup of

orichalcum. An isometric affair, it sees you wandering around key scenes from the story, solving puzzles, beating up Nazis and generally behaving in an arcade-style manner.

Like the previous Indy action game, it neither captures the spirit of the character or creates enough excitement to keep your interest and just pales like a waning moon when put next to Lucasfilm's effort.



Indiana Jones and the Last Crusade — The Graphic Adventure

Lucasfilm, £30.99

The previous Indy film was also transformed into two computer games — a fairly average arcade bash, and a thoroughly enjoyable and critically acclaimed adventure. Although the graphics and sound effects seem somewhat primitive when compared to this latest outing, Indy 3 has a major advantage in that it's based on the film of the same name and therefore has a much stronger plot.

Despite its age, I'd heartily recommend The Last Crusade, simply for the fact that it is so much fun (and you'll be able to understand the "Hi, I'm selling these fine leather jackets" quip that has come up in every Lucasfilm game since).



Monkey Island 2: LeChuck's Revenge

Lucasfilm, £39.99

On another track, but no less enjoyable, are the adventures of Guybrush Threepwood in both The Secret of Monkey Island and its sequel. Using the same SCUMM system to tell its story (and also employing the iMUSE system in the sequel), the Monkey Island games are the traditional swashbuckling pirate affairs, with ghosts, buried treasure and more than its fair share of parrots.

Personally, I preferred the original to the sequel, but both are just as enjoyable for the most part and are a perfect complement to the Indy series.

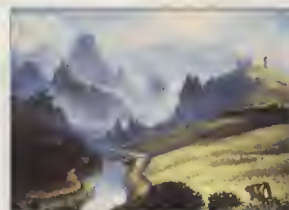


Heart of China

Dynamix, £39.99

Being based (unofficially) on the substandard Raiders rip-off, High Road to China (starring Tom Selleck), Heart of China is more of an interactive movie than a true graphic adventure. Using digitised actors to carry the scenes and beautiful landscapes to set the scenes, you certainly can't fault HOC's presentation.

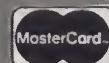
Sadly, you can fault its gameplay as there's precious little of it. HOC also uses the plot branching seen in Fate of Atlantis, but to a less effective end. In all, HOC is a great game to look at, but just doesn't have the meat to last for long against the 'big boys'.





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SOFTWARE REVIEW

- Aces of the Pacific
- Dynamix/Sierra On-Line
- £39.99
- (0734) 303322

Aces of the Pacific

This long-awaited flight sim's heritage is second to none, a development of the system used in A-10 Tank Killer and Red Baron

As Lucasfilm's Secret Weapons of the Luftwaffe (SWOTL) portrays the theatre in Europe from 1943, Aces of the Pacific recreates the Pacific war from 1942. Comparisons between the two products will be inevitable, as they both take a similar historic approach to a combat-orientated flight sim. Both involve multi-airplanes, have various missions and a campaign option. SWOTL has been ruling the skies for some time, but Aces is half a generation ahead in software design, and threatens to beat SWOTL if it comes to a dogfight.

So down to the nuts and bolts – how does Aces perform? Firstly, you must decide whether to follow the path of the Rising Sun, or go for Uncle Sam. If you go for the Japanese option, you have a choice of being a flier either for the Imperial Japanese Army, or for the Imperial Japanese Navy. The American way gives you the choice of US Navy Airforce, US Army Air-



TWO MINUTES OF PLANE IDENTIFICATION

The USS Yorktown was one of the three great aircraft carriers in the US naval fleet. Sadly, it was not destined to survive the carrier battles of 1942, a privilege reserved only for its sister ship, USS Enterprise.

There 'floating camera' feature can provide some spectacular views of your plane in flight. You can look at it from any angle, and zoom in and out at will. This is most useful when you replay missions, since you don't have to concentrate on flying the plane!

The realistic detail provided by the texture mapping is one of the most impressive aspects of the game. The overall effect is made even more amazing by accurate additions such as the flaps that actually move correctly.

When you begin attacking enemy carriers, you'll find that you're not heading for something that looks like a few kiddies' building blocks.

These carriers actually resemble the ships they are supposed to represent.





Carrier landings are one of the hardest aspects of the game to master. Speed, attitude and rate of descent must all be carefully coordinated, with the help of indications from the landing signal officer. A small error can mean crashing into the deck or overshooting completely, so plenty of practice is called for.

force or a 'flying leatherneck' for the US Marines. Each branch of the services has its own planes. The US Navy, for example, does not have the twin boomed P-38 Lightning, so your choice of service is relevant. Also the service selected will define the type of missions – the marines are more likely to fly ground attack, the navy to attack shipping.

Having enlisted, you now have the options of flying single missions, or taking part in a campaign. The single missions include flight school, dogfighting and many others.

It is here, particularly at the flight school, that aspiring aces will learn their trade. The flight controls are delightfully simple and very responsive. A few words of warning: the hardware requirement (386 and 2Mb RAM) is high, the flight models are very complex and it really needs a decent joystick to get the most from it. Initially, I tried playing it with a cheap stick that just didn't do it justice. The manual plugs a Thrustmaster stick, but I eventually decided on Westpoint Creative's Flightstick for the purposes of this review. This gave a brilliant response and a much better feel. Joystick quality is also important for the superb 'roaming' views, but more of that later.

The flight controls are simplicity itself. Joystick, mouse or numeric keys can be employed, with each control method working pretty well. In addition, there are 17 keyboard controls for the likes of flaps and landing gear. There is no need for a complicated keyboard overlay, nor for convoluted double key presses. This ease of use makes the actual flying a joy, but if you're really lazy, there is even a jump facility to go from waypoint to waypoint.

Each plane has its own characteristics, and you can also set the level of difficulty for the flight model. Novice, standard, and expert are the choices. Novice is an easy mode in which the aeroplane will not drop its nose when turning. Intermediate is

a realistic, but generalised flight model, while in expert mode each plane has its historical quirks, such as tendencies for aileron lock and guns jamming. Further to this general level of difficulty, there are also 10 other factors that can be set to make flying more or less challenging.

If you are one of the Navy fly-boys, one of the many techniques that you will have to master is the carrier landing. Aces has attempted to introduce unparalleled realism; you must first fly over the carrier to allow the LSO (Landing Signal Officer) to check your plane. He will visually check hooks down, flaps down and wheels down. If all these are OK, you can manoeuvre your plane to approach the carrier. The LSO will be standing on the flight deck waving some paddles around. These the pilot uses to achieve one of the most difficult tasks in flying – a landing on the pitching, weaving deck of an aircraft carrier.

Finding your wings

For fledgeling aces, turn off all the potential problems and have unlimited ammo, unlimited fuel and no damage. All right it's a bit Mickey Mouse, but it will enable you to get your wings. This ability to subtly tailor the program is one of its great strengths. Too many similar products try and find a middle ground to provide both depth of play and a challenge, but with an easy introduction and learning stage. Aces allows a gentle learning curve, to enable you to become familiar with the controls, but with the tweaking can provide genuine long-term satisfaction, even for the most hardened veteran.

A superb option offered by Aces is the ability to fly night missions. The star-strewn Pacific sky is strangely peaceful, at least until the anti-aircraft bullets and tracers start flying. This addition is indicative of the thought that has gone into Aces, and makes it such an impressive release.

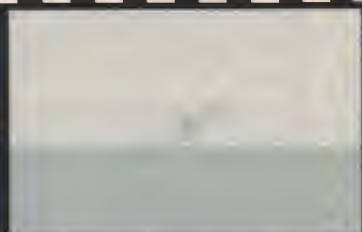
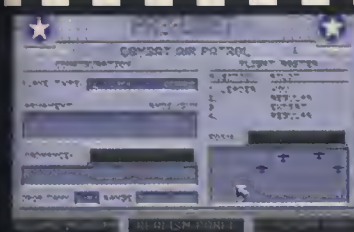
There are dozens of preflight options which let you tailor the way the game plays. Switch off some of the graphic detail for slower machines, or bump up the realism if you're an experienced flier – however you want to play it, you can.

The most famous of the Japanese planes was the A6M2 Zero, manufactured by the same company, ironically enough, that now supplies American families with television sets, video recorders, and other domestic appliances: Mitsubishi.

The workhorse of the US carrier planes was the Grumman F4F Wildcat, characterised by its squat size and folding wings. Although technically inferior to the Japanese Zero, teams of Wildcats managed to defeat them in the battles over the Pacific.

Flying through clouds is a most eerie effect, as the mist obscures aircraft that are not close.

Without the sophisticated tracking equipment for post-war planes, it becomes very difficult to maintain a dogfight or chase in heavy cloud.



On daylight missions if cloud cover is heavy, you will actually fly through clouds. If you are chasing opposition and fly into cumulus, your visibility will decrease, and you may even totally lose sight of your quarry. The flying in and out of the clouds is brilliantly dealt with, the graphics capturing an eerie sensation, similar to driving a motor car through thick fog. This sets up some wonderful hide and seek, and lends another chunk of realism to Aces. This can of course be applied in reverse, and used against pursuing fighters.

Combat necessarily forms an integral part of Aces, and the level of difficulty is again variable. Easy mode makes you tough to shoot down: your opponents aren't. Standard mode reduces your advantage slightly. Hard mode is realistic level play: neither side has any advantage.

The flexibility of the flight model means that you can make combat as challenging as you want. In the higher levels, the advantages and disadvantages of your selected plane will come into play, with factors like performance at different altitudes. The best general advice is try and walk before you fly. Practise deflection shooting and combat techniques, before you move on to the tougher missions. At the higher level of difficulty, there are problems like gun-jams and engine burn-outs, so you must look after your faithful steed.

Bombs away ...

Bombing, both of the dive and torpedo variety, requires some skill and must be practised. The destruction of enemy carriers is the key to success in Aces (as it was back in the 1940s). This is where the mission recorder comes into its own.

Combat includes air-to-air fighter combat, protecting or attacking bombers, ground attack, and the attack of shipping. Out of all the missions, the dive bombing and torpedo bombing of enemy carriers is the real buzz – can you turn the tide as dramatically as actually happened during World War II?

On bomber intercept missions, if you choose the Japanese pilots, you can go up against B-24 Liberators, B-25 Mitchells, B-17 Flying Fortresses, or even the B-29 Superfortresses with their remote controlled gun turrets. This is a one-sided contest, due to the great speed and high operational ceiling of the B-29s. Dynamix hints that some 'what if' planes from 1946 may appear on later mission disks.

Probably the most impressive feature of Aces is the 'floating camera'. This allows you at any time to look through the normal views from inside the cockpit, and also from outside to look at your plane from any angle. This view will change with the mouse or joystick, actually moving around the plane as it flies. It is almost hypnotic to move around the plane in flight inspecting it from every angle and framing it against differing backdrops of sea, sky, islands or other ships and planes.

This facility has been available to a limited extent in other flight sims, but never in such a comprehensive and fluid way. The gaming engine gives a unique sense of realism to this combat flight sim and cannot be rivalled by its competitors.

Aces, like SWOTL, has, in addition to one-off missions, a campaign option. This enables you to fight your way through a series of missions, loosely based on historic conflicts. If a ship is lost early in the campaign, it will not reappear in a later chapter. A record is made of your achievements, and awards given as appropriate. If you are successful, promotion will follow, possibly with you earning the accolade Ace of Aces. This works well, but as it is really just a loose combination of missions, it lacks the depth of campaign options in SWOTL.

The Mission Recorder really puts the icing on the cake. It is



The interiors of the planes are reproduced in perfect detail, as can be seen from these shots of the interior of a P-38 Lightning. It is here the texture mapping really comes into its own.



a development of the VCR system seen in previous Dynamix products but the advantage of the Aces recorder is that you do not have to set a film length nor start recording before the event occurs. Most of the time it is only when you successfully sink the entire Japanese Carrier force you think '... wish I'd recorded that ...'. When you quit a flight, Aces allows you to save it retrospectively, and length seems to be unlimited.

The real power and versatility of the Aces Mission Recorder then becomes apparent; not only can you keep various films and replay them, you can also at any time, jump back into a film and continue. In this way, you can try a variety of tactics to deal with a specific mission, and evaluate which is the best technique. It is also a wonderful training tool, encouraging you to learn the best method to achieve success. Add to this the same floating camera ability, and an independent viewpoint, and you can review a previous mission from any angle.

The original missions or replayed versions can be saved for posterity in your battle library. These can be used in the demo



In keeping with the accent on realism, the damage that your plane can receive can be frighteningly ferocious, this crash being a prime example. Wings and engines can catch fire and you'll actually see them burning if you take a peek out the window ...



Secret Weapons of the Luftwaffe

Lucasfilms/US Gold, £40.99

This has been one of the best historic flight sims on the market for some time. With superb graphics and lots of playability, SWOTL has lasted very well: the new scenario disks keep this product at the forefront of computer gaming. SWOTL has a stronger



campaign option, and a good supply of new equipment and lots of 'what-if' hypothetical planes, and some anachronistic conflicts. SWOTL is more 'attacking the bombers' orientated than Aces, which has more dogfighting and variety of missions. The graphics are not as sharp, and the controls are not as easy as in Aces. The floating camera, general smoothness and several Aircraft Carrier options push SWOTL into second place.

Chuck Yeager's Air Combat

Electronic Arts, £34.99

The oldest of the titles, but still a very competitive product.

Comes from an impressive heritage of the two early Chuck Yeager games, but now for the first time with combat. The graphics are average, but CGA, EGA, VGA and Tandy are supported. There are several



planes to fly, including an option to mix planes from different eras. The flight model is very good, combat is taxing, and the plane is easy to stall accidentally. More for the purists, but it has aged well. Comes with a mission recorder and various flight angles, but no floating camera.

Heroes of the 357th

Electronic Arts, £34.99

New release from EA that has been long delayed. A simplified form of historic flight sim, with emphasis on combat. The take-off and landing is automated, so you travel straight to the combat area. There is only one plane available for flying, the



PSI Mustang, which enables you to go on dogfights, bomber interception and ground attack missions. The graphics are very good in VGA, and good in EGA. The detail level is switchable, so the game will run acceptably on slower machines. Opponents are also limited, so this game does not have the long term appeal of SWOTL or Aces, although there is a campaign option. The flight model is good, and some of the external views are excellent. The replay facility works well, and bomb and rocket views are particularly good. Good, but a little late.

facility, so that the rolling demo becomes a testament to your unbelievable skill and courage. The ability to go back into a recorded sortie also means you can send it to another pilot to see how he fares. The mission recorder, in other flight sims, is often a superficial add-on. In Aces, it provides another dimension, and greater depth, making the game quite addictive.

A benchmark for the 90s?

As regards future development, Dynamix has already stated that there will be mission disks, perhaps including some 'what-if planes', as in SWOTL. In the meantime, there is plenty of challenge and variety in Aces to keep you flying for a long time to come.

Aces of the Pacific comes in the now standard, big Sierra box and comes on three high density 3.5" disks. The installa-



Are you a possible Ace of Aces in the making? Put your abilities to the test during this torpedo attack on the enemy. Watch out, though, you might get a taste for this!

tion program is simple, although the files take a little time to decompress (but very quick when compared with Star Trek – 25th Anniversary!).

The documentation comprises a short installation guide, a Quick Reference card and the flight manual. The latter is an absolute gem, well up to the standards of Lucasfilm or Microprose. The manual is some 230 pages long and is divided into a historical overview of the war in the Pacific, 100 pages dedicated to aircraft of the period and air combat techniques, and the gameplay section. The middle section contains 30 full page colour plates of the combatant planes, plus their technical specification.

The manual is littered with photos from the period and some cracking line drawings and diagrams. The size of the gameplay section speaks volumes for the



ease of use of the program. Including diagrams, illustrations and photographs, only 30 pages are dedicated to 'how to fly'. This is well written and should be used as a reference book by those who compile such works. It covers all aspects of the mechanics of the game, makes sense and is short!

There is a brave boast on the box of Aces of the Pacific that it is 'a benchmark of the 90s for flight simulators'. Watch out for the new flight sims – they have some new high standards to reach, and the above quotation may prove all too true.

ROBIN MATTHEWS



REQUIREMENTS

These are fairly demanding – an 80386 processor (DX or SX) with MS-DOS 5.0, a hard disk, and at least 2Mb of memory. You must have at least 610K free conventional memory, and 312K free expanded memory (EMS), and a memory manager such as EMM386 or QEMM-386 must be present. The program takes up some 8Mb hard disk space when installed.





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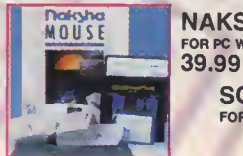
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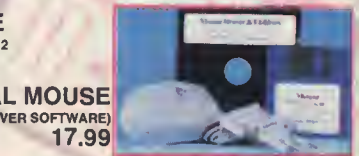


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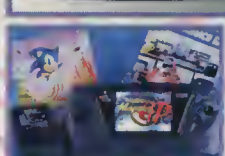
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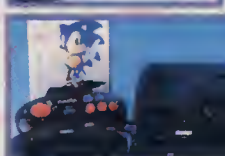
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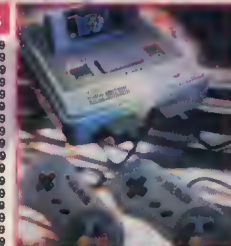
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SOFTWARE REVIEW

- Jimmy White's Whirlwind Snooker
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If smoky snooker halls aren't your scene, you can now enjoy a quiet game of snooker in your own home courtesy of Jimmy White and Archer Maclean



If you're still not convinced about the accuracy of this simulation, take a look at this. Balls move as smoothly and as realistically as they do in the real thing.

Jimmy White's Whirlwind Snooker

Snooker simulations certainly aren't a new idea; there have been several, from a coin-op version through to a recent 16-bit simulation endorsed by Steve Davis. The problem with all the previous simulations is that, while they've stuck closely to the rules of snooker, they've fallen short of being accurate simulations of the game. This is understandable to a certain degree, since there's a lot of maths involved in realistically reproducing the effects of a set of hard spheres bouncing around on a baize-covered bed of slate. Just how much is indicated by Archer Maclean's work files, created during the game's development. There are over half a dozen of

them, jam-packed with A4 sheets covered with quadratics, polynomials and the like. Those files represent three years of dedicated work, and the result is nothing short of stunning.

Overheads and close-ups

The immediate appeal of this simulation is its TV-like presentation. Imagine a camera able to show the table from any angle and zoom in to get close-up shots of a single ball, and you've already got some idea of what Archer Maclean's game can do. You can have the standard plan view of the table that featured in all those previous simulations, but you can also zoom in to



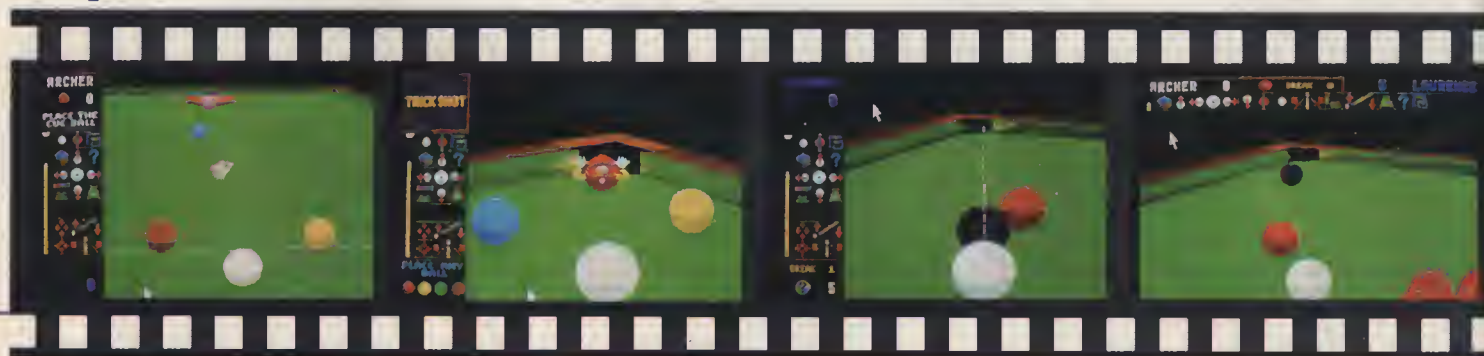
TWO MINUTES OF MACLEAN VS SCOTFORD

And here we are at the Crucible Theatre, Sheffield for the World Championship final between Archer 'Gale Force' Maclean and Laurence 'Strong Breeze' Scotford. Archer to break.

With both players still to score, Laurence is on to a fairly easy red into the top-left pocket. And I think, Ted, that with a bit of top-spin he should be able to follow that one up with the black into the same pocket.

What a superb shot that was, Jack. This young player has really shown his worth at this, his first championship. But has he got on to that vital black? If he can see it, he'll be in a position to mop up a few more reds.

Well, that's a real shame for Laurence, he's been blocked by that red, and there are no other possible pots, so he'll just have to play for safety. How's he going to tackle this one?





see the balls at their actual size. In short, you can see the table exactly as a real player would see it.

Although the comprehensive views are controlled, as is everything else in the game, via a panel of icons ranged either



Who said that snooker was a serious game? This is just one of the faces that the balls pull if you hang around before taking a shot.

along the top or down the left side of the screen, you can also zoom in and out, change your angle of view, and revolve around the table just using the mouse.

But, as impressive as the 3D is, it's only one aspect of a game chock full with brilliant features. Take your first shot and you'll see exactly what I mean. Balls bounce off each other and the cushions with satisfying clicks and bumps, and they move so smoothly and realistically that you almost forget you are looking at a two-dimensional image. Everything that you might expect to happen in the real game can happen here; balls bounce frustratingly just on the edge of the pocket and then stop, the cue ball slips quietly into a pocket just after I've made a near impossible pot, I snooker myself frequently ...

In off the pink

The subtlety of playing the game is reproduced, too. You want to slip a ball softly into a nearby pocket without the cue ball following it? No problem, you can adjust the strength of the shot, and which part of the cue ball you hit to a very high degree of accuracy. What is perhaps even more impressive is that the simulation will only let you take shots that are actually possible. You won't be allowed to put heavy backspin on the cue ball when it's tight up against a cushion, for example. The

And there we've seen, Jim, that this young player's safety play is just as impressive, but will it be enough to overcome the experience and skill of Archer, who's been in the game a lot longer?

Well, Sam, I see that Archer has spotted a possible shot into the middle pocket, and this could very well put the frame his way. We've seen this player demolish the opposition during this tournament.

Oh what a disaster, Archer has miscued and broken up the pack. What a blow that is for this greatly admired veteran, who's still hoping to carry off his third World Championship trophy tonight ...

Well, this is quite incredible Bill. Laurence had a great chance to profit from Archer's mistake, but he's fouled on an easy shot, and that may well have lost this new talent both the frame and the championship!





If you have trouble lining up your shots, this feature will project the path of your cue ball. Double clicking on the right icon will also show the angle of reflection.

same applies if the cue ball is partially hidden by other balls; you can only strike the parts of the cue ball that can be seen. The crosshair on the Take Shot icon even shows you which positions are possible. Normally, there are 164,229,120 different shots possible when the cue ball is unobstructed! With collisions and ball movement accurate to 0.00000003 of a metre and 0.0000006 of a second, you can be pretty sure that shots you make will work out exactly as they would on a real table. These may seem like very minor points, but previous simulations have all suffered from a lack of accuracy and subtlety in this area.

Lining up

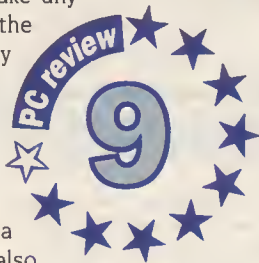
There are a range of helpful features for those of you, like me, who have an appalling visual sense when it comes to angles of reflection and deflection. Click on any ball with the right mouse button and the view will automatically line up so that hitting the cue ball dead centre will strike the selected ball straight on.

From this position you can make any minute adjustments required for the shot. There is also a sight line facility in which the path of the cue ball is projected (which can be a nice way of getting out of snookers if you have problems in that area).

The most interesting way of playing the game is to play against a human opponent, but there are also four computer opponents, ranging from easy to Jimmy White himself who is near impossible to beat. Trick shots are also catered for. You can set the balls up in any position, sliding them across the table with the mouse. This set-up mode can also be used for practising difficult shots at long range or from tricky angles.

Attention to detail is impressive throughout this product, but Maclean hasn't taken his subject too seriously. While you are lining up your shot, the balls will often transform into silly animated faces, and watch out for the pesky flies which crawl up the screen, just like the real thing.

Trying to describe Jimmy White's Whirlwind Snooker is very difficult, the only way to really appreciate its qualities is to



ALTERNATIVELY...

Sharkey's 3D Pool

MicroProse, £39.99

Currently there are no other snooker simulations available on the PC, and this is the only Pool simulation you can get. It's getting a bit long in the tooth now, and it shows. Frankly the 3D visuals pale in comparison with those in Jimmy White's Whirlwind Snooker, although this game does cater for just about every graphics mode, including Hercules. Sharkey plays a reasonable game which is worth having if pool is your thing and you just can't bear to wait for ...



Archer Maclean's 3D Pool

Virgin Games, £TBA

The logical follow-up to Snooker is now well under way and looking very nice indeed. The same system is used but the simulation covers all the popular versions of Pool, including real American nine-ball. There will also be more statistical information on your play than is presented in Snooker.



Picture from Amiga version



This shot shows just how effective the 3D can be when you get in close to the cue ball.

actually play it, and I'd recommend you do just that. If you're a snooker fan you'll find that this simulation captures the game about as well as you can hope for in a computer game, and even non-Snooker addicts will find that slick 3D impressive. This is certainly one of the best-realised sport simulation of recent years and ranks among this year's 'must buys'.

LAURENCE SCOTFORD



REQUIREMENTS

The simulation will run adequately even on a 12Mhz 286, but is smoothest on a 386 or better. A mouse is pretty much essential.



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weapon...*

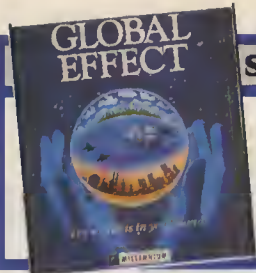


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SOFTWARE REVIEW

- Global Effect
- Millennium
- £34.99
- (0753) 549442

In a worthy effort at keeping up with the themes of the 90s, Millenium's Global Effect is a world domination game with a difference: you must balance the expansion of civilisation with its effect on the environment. The game offers three ways of going about this laudable task.

Firstly, you can create a world. This, in Civilization fashion, allows you to build your own world, either as a standard 'green field' type or one of eight scenarios, varying from archipelagos to frozen, barren, or forested terrain, each with its own characteristics and problems. For example, the barren world is old, with high temperatures, large expanses of deserts and cities that are a struggle to maintain. Each scenario can be played as a game for one player, two players, or one against the computer, and you can choose the level of difficulty in the latter.

Secondly, you can save a world. Here, rather than creating a planet and trying to avoid disaster, you inherit one already on its brink. You have it a limited amount of time, and resources to rescue the post nuclear, post industrial, global warming and spent world situations. This is more challenging than creating a world as you are battling to prevent the end of civilisation!

Finally, you can rule the world. In this, the most militaristic option of all, you take on an opponent for the prize of global domination, either in economic or more conventional (and

Global

Not just another god-sim game, but an attempt to build a city with respect for the environment – green issues and computer games, strange bedfellows indeed ...



Building a sustainable community that won't damage the environment is the aim of the game. It's not just a matter of monitoring your coal and oil burning power stations, but controlling the spread of built-up areas too.

nuclear) warfare. This is not just a question of nuking the enemy if you are losing; any damage to the environment must also be repaired, including that inflicted by your opposition.

If the options and gameplay seem varied and tempting with hours of good, clean, green fun, how does the interface and playability match up to these high ideals?

The ozone layer

The graphics are VGA only, well presented and clear. The main screen is called the Governmental Console, 'Govcon' for short, and gives access to the main reporting screens which are the core of Global Effect. These in turn report environmental and economic data on your world: the level of carbon dioxide, the state of the ozone layer, global temperature, air pollution, contamination and so on. During the game these must be checked regularly to ensure that you maintain the environmental balance.

Throughout the game, it's up to you to juggle the demands of your society, with long term effects on the world. On the main screen, there are a series of gauges and indicators to



TWO MINUTES OF PLANET MANAGEMENT

At the beginning of the game you have a virgin world – an empty slate to do with as you wish, provided you keep the planet alive.

The first thing your people is going to need is somewhere to live, but without water or power it's not going to be a particularly pleasant dwelling.

A farm placed nearby will cater for an immediate need: food. Your residential block is still dark however, so somehow we need to generate power.

A suitable fuel for generating power is oil, and since this is a coastal site we can drill for oil in the sea.



Effect



warn you of likely problems, but the report screens have to be accessed regularly. Construction of items has a cost and is deducted from your power level. You can build city blocks, farms, pipelines and cables: this could be Sim City, were it not for the sewage farms, recycling plants, solar power and tree planting which give this product its ecological bent. The battle system, called up via another menu option, is simplistic in design. Units are limited to HQ, air and sea bases, and missiles. The strategy element is kept to a minimum and not even as complicated as that found in Civilization.

Choosing and using gameplay

The gameplay is rather disappointing. The world creation and scenarios are all fine, and very professionally done, but the main screen, the GovCon, is not well implemented. The two essential ingredients of the game are building and regularly keeping an eye on the various reports. To build something, you have to scroll through all the possible items, then move the cursor on to the proposed site. The icons representing each item are not intuitive and only one is displayed at a time. In a product like Sim City, each of the possible icons is shown on

The oil is no good to anybody unless we can get it to land, so the next stage is to build a pipeline so it can be pumped to stations on the shore.

Add a land based rig and an oil refinery and we're half-way to setting up a sustainable and habitable city for our struggling population.



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Use the bar graphs to keep tabs on how the geography and geology of the world is changing in response to your actions. If deciduous and coniferous areas are being turned into desert, you've got problems.

screen, easily recognisable for what it represents, and the items constructed have a feeling of continuity and existence, something decidedly lacking in Global Effect.

Constantly accessing of the report screens becomes tedious and repetitive. They really contain too much information, and are not that well presented. Combat is not worth talking about, and much better depicted in other 'God' games. There are also some totally daft rules that cost power just to look around and get information. The game cries out for a tutorial, either in the manual, or within the software itself. The system is difficult to pick up, and anything which makes the learning curve easier would be welcome.

In summary, Global Effect is a valiant attempt to produce a simulation dealing with topical issues. Far more peculiar subjects have been simulated in computer games, from Air Traffic Control, to ant colonies. The crux of successful simulations is their playability. Try explaining Sim City to a non-computer user: "Well, it's a game where you build residential units, and then power stations and roads, but you have to watch pollution, and you have to set tax rates, and ...!"

It sounds like watching paint dry, but the graphic presentation and interface is such that Sim City, Civilization and many others are absolute gems, defying the lack of entertainment in their subject matter and even becoming addictive. Global Effect is let down in the presentation department, and this



Sim City

£30.64 Maxis/Infogrames.

One of the first god-sims, it involves the development and growth of a city; you have to provide enough houses, shops and industrial units to keep everyone happy. Added complications are taxes, crime, fire and pollution. Various ready made cities, for instance, San Francisco during an earthquake, are also included. It's a little repetitive, but strangely addictive. Scenario disks have also been released with moonbase cities, Wild West towns and so on. This product established god-sims as a genre. An essential purchase, with most of the qualities that are missing from Global Effect.



Civilization

MicroProse, £39.99

One of the best computer games ever released. Larger in concept than Global Effect, you start with a small tribe of nomads and establish a civilisation to last several thousand years. It boasts good graphics with an intuitive interface. This game has so many subtleties and so much depth. Addictive and very re-playable; create your own worlds, take the role of Caesar, Genghis Khan and other famous world leaders. A wonderful balance of economic, military, political and technological factors, it's one of the few true greats. Gameplay and entertainment is way ahead of Global Effect. If you don't own this yet, buy it!



Sim Earth

Maxis/Ocean, £40.86

A really massive release from Maxis. The concept of the game is to influence the development of life itself, through altering the conditions that affect the biosphere. It is very detailed in parts, with a multitude of very complex interacting features. Sim Earth presents a unique opportunity to actually terraform dead worlds to create life. Watching microbes grow into complex multi-cellular lifeforms may not be to everyone's taste, but as an educational tool it's almost without equal.



causes problems with the playability and attraction of the game. Ecological concerns may be great and good and worthy, but Global Effect doesn't make saving the environment seem terribly exciting.

ROBIN MATTHEWS



REQUIREMENTS

Global Effect comes on three disks, will run from these, but a hard disk is recommended, with just over 2Mb of space. DOS 3.0 or higher, and 640K of memory. A high performance PC is advisable.

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SOFTWARE REVIEW

- A Town With No Name
- On-line
- Entertainment
- £34.99
- (081) 558 6114

CD-Rom takes on the Wild West
but players may find more

A Town With No

The Town With No Name could be renamed the CD-ROM with no budget, the story with no plot, or the game with no point. Brought to you by On-line Entertainment and Delta 4 Interactive – which describe the game as taking 'the multimedia experience one step further with this vast interactive cartoon feature' – it's a product that has a singular inability to excite your imagination on any level. Which is sad really, as the concept is basically a good one.

A Town With No Name – in concept at least – is a homage to the American Western. Its designers have attempted to take a classic Western story and turn it into a piece of interactive fiction. However, the English production team never really managed to get its collective heads around the genre, and in the process have produced a game with poor production values and extremely unconvincing American accents.

The first telling signs of what you're in for appear when you install the game. The process itself is quite simple: type Install at the D: prompt and the program creates a tiny .bat file on your hard disk, a nice change from other CD-ROM products which eat up 10 or 20Mb of your hard disk in the installation process. The installation program asks you a few straightforward questions, including whether you have a Sound Blaster or Sound Blaster Pro audio card, the only two sound cards the game supports, and what drive labels your hard disk and CD-ROM drive are using.

The Readme file on the CD-ROM says that 500K RAM of base memory are required to run the game, so having duly arranged for this to be the case it was a big disappointment that the game insisted on crashing continually. Even after intensive sessions of Autoexec.bat and Config.sys editing, with the aim of freeing up as much memory as possible, the game still refused to work. In the end, I resorted to trying every machine within reach, eventually finding one which – for no obvious reason – was happy to run the program.

You can tell A Town with No Name was originally developed for Commodore's CDTV – the tutorial features the image of a CDTV controller and a voice-over explaining how you use its buttons A and B to control the action. At first, I thought I had the wrong version of the disc, but a call to On-Line confirmed that, yes, the PC version of the disc did indeed have a tutorial explaining how to use the game with a CDTV player. That really had me worried.

But it was the game itself that came as the biggest disappointment. It opens with a 3D animation of a train coming into town, off steps our hero, the Man With No Name, into the Town With No Name. As the scene unfolds, you are offered no indication of your character's personality or motivations and no central mission or goal is revealed. Your first encounter is with a badly animated gun fighter who instantly starts shooting at you. Your obvious response is to shoot back by clicking on him



with the mouse. As you watch the terrible animation of the gun fighter falling to the ground, blood freely gushing from a stomach wound, you get a sinking feeling all of your own.

As it happens, killing this man is the premise on which the rest of the game – which involves moving around the key scenes in the town and indulging in periodic bouts of blood letting with the league of arch criminals – is based.

The most basic design fault of the game is its simplistic logic which offers very few choices at very few times. Almost all of the gameplay – if you can call it that – is via menus. A typical example of this is the opening sequence. After you have done away with the gunfighter, the first menu appears on screen giving you the option of visiting one of the eight locations on the main street. Why you just can't directly select the saloon, blacksmith, town offices, jail, etc, by clicking on the building you desire, is a mystery.

Almost all movement and action is controlled via these menus. Typically, you make a menu selection which triggers an animation at the end of which a new menu appears, and so on and so forth. It's only when these menus appear that you have any options at all, and consequently you never really feel any control over or involvement in what's happening.

The saddest thing about the Town With No Name is that it has all the right ideas. Any one who has seen products like Spaceship Warlock, which is at present only available on the Mac, and the soon to be released 7th Guest developed by Trilobyte and to be released by Virgin will know what can be achieved through the combination of 3D modelling, movie style production values, interaction and CD-ROM.

What these games have in common is that they use 3D modelling to provide navigable environments, space the user can move around in freely. In the case of Spaceship Warlock, the environment is a spaceship, whereas with Guest it's a

spaghetti than rawhide in this
movie-inspired adventure

o Name


haunted house. In both games, you move around these virtual worlds making choices simply by clicking on the left of the screen to turn left, right to go right and in the centre to go forward. Through the combination of these techniques, the use of 256 colours that Super VGA offers and a good story, a great deal can be accomplished.

It's in comparison to products like these that a Town With No Name is such a bitter disappointment. While the games designers are obviously keen to explore the potential of the interactive movie genre, they appear to have missed all the fundamentals. The only time A Town With No Name uses direct interaction is in a shoot-out and these screens are few and far between. For the rest of the time, simply moving around is a cumbersome process of using the menus which restrict your options.

While 3D animation has a lot to offer the games genre, poor 3D animation is really a step backwards, and that's what this disk reeks of. The basic rules of animation are pretty simple – you have either got to either make it fast, as fast motion covers up for a lack of detail and colour depth, or you have to make it detailed. In a Town With No Name you have neither. Speed is always going to be a problem with CD-ROM products simply because of the 150K per second limit to read CD-ROM data. Overcoming this requires the intelligent use of extra RAM to allow large animations to be spooled directly from memory, something this game just doesn't have. The alternative – and the thing that CD-ROM is good at given its enormous storage capabilities – is using complex photo realistic images. However, the game designers have overlooked this possibility, electing instead to use 16 colours and to give their scenes very little detail.

At the end of the day, all could be forgiven if only the story and the game had something to recommend them. Sadly they don't.

TIM CARRIGAN



REQUIREMENTS

You'll need CD-ROM drive, Microsoft CD-ROM extensions 2.2 or later, 500K of main memory.

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| Hercules | ✗ | Roland | ✗ | Ad Lib | ✗ | | |
| HD | ✗ | | ✗ | | ✓ | | ✓ |

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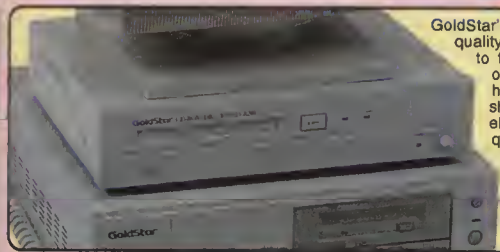
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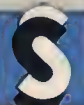
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SOFTWARE REVIEW

- Magic Pockets
- Renegade
- £30.99
- (071) 481 9214

There's plenty to keep grown-up kiddies occupied in this game for younger players

Easily the very best platform game to have appeared in recent months is the Bitmap Brothers' superb puzzler, *Gods*. Players who tried it were refreshed by its many original features, including intelligent aliens and hidden traps, rooms and treasures.

Magic Pockets is the Bitmap Brothers' offering for people who really rather prefer to give their brains a rest and exercise their trigger fingers.

The plot of the game is firmly aimed at the yooof market, for which the game's central character just doesn't appeal unless he's cool enough to freeze polar bears, and wear his shades everywhere, even in the bath. For those of you over nine years old who have trouble interpreting the terminology, here's a brief précis of the story. The Bitmap Kid has a pair of magic trousers with bottomless pockets, the magic pockets of the title. Within these he keeps all of his toys. Unfortunately his pockets have become overrun by Bad People who have stolen his four best toys. There's only one thing for it, he'll have to enter his pockets himself, retrieve his toys and do away with the Bad People, before finding a way back home.

As with *Gods*, *Magic Pockets*' main appeal comes from the way the player interacts with the game to alter the gameplay subtly. You can just pitch straight in, explore and blast everything in sight, as you would with *Dull World Jump 'n' Run* from Mediocre Software Ltd. It's fun, but, if you never get beyond that stage, you'll be missing a lot of the game's subtler aspects.

The game is set across four worlds, each divided into a number of levels and in each of which, one of your toys is to be found. Your primary task is to make your way through each of the levels and find the exit, but if you manage to retrieve your

PC review



ALTERNATIVELY...

Gods

Renegade, £34.99

If you want a well-designed platform game, but fancy something a bit more puzzle-oriented, then look no further than *Gods*. There's a fair amount of shooting up bad guys to be done, but a good deal of brainpower is required too, to figure out how all the tricks traps and hidden features work. If you're an older player this may well have more appeal for you.



Prince of Persia

Domark, £30.64

An entirely different experience is *Prince of Persia*. It's getting on a bit now, but the fluid animation still looks as stunning as ever, and although the background graphics get a bit dull after a while, the gameplay holds up quite well. The chief attributes required for this game are dexterity and a little lateral thinking.



toy along the way, there are big bonuses to be had. Furthermore, each toy has a special power which can be put to your advantage.

At the start of each level is a Bad Person who heads straight for your toy and steals it, unless you kill it first. So in the caves, for instance, when you finally find your bike the chances are that it's being ridden by a rock man, who you'll have to destroy to retrieve it.

Get to the end of the world and you're rewarded with another surprise: a bonus level which takes the form of a bike race against half a dozen rock men. There is an event like this at the end of each of the worlds, with the final one revolving around the very act of getting home.

Although the action is essentially platform based throughout, the four worlds are different enough to keep your interest. Your weapon is a different weather-related effect in each world,

PC review



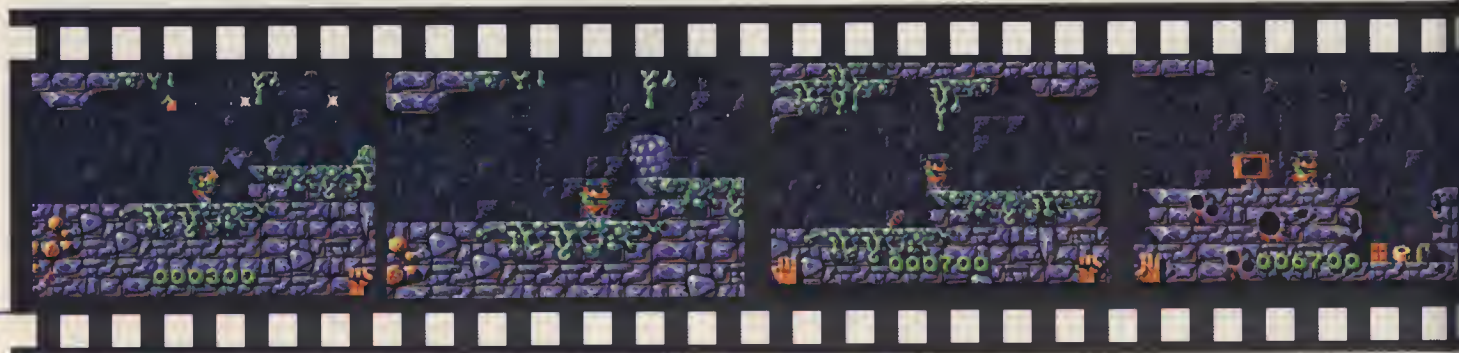
TWO MINUTES OF BONUS BAGGING

Kill counts are important in this game, watch as the bonus sweet in the left hand changes as you bump off Bad People.

To actually get that bonus, you first need to trap a bad person, by generating a large shot. This is done by building up maximum power.

Jumping on to the trapped bad person will yield the bonus that was indicated in quantities proportionate to how hard you hit it.

Keep the kill count climbing and you'll eventually start clocking up the power-ups, like the milk bottle for extra lives.



Magic Pockets



Every so often in the game, you'll come across the bubble-gum machine. Being as cool as he is, the Bitmap Kid can use it to give him a lift.

whirlwinds, clouds, ice blocks, and snowballs, and each is used in a slightly different way. Perhaps the most original example is that the clouds in the jungle will create rain which, if placed correctly, causes new platforms to grow. In the third world, you can use your ice cubes to freeze lakes temporarily, and thus walk over them safely.

When used for their normal purpose of destroying Bad People, the four weapons work on a R-Type style power system, so that the longer you hold down the fire-button, the more powerful the shot. The most powerful shots don't instantly destroy Bad People, as you'd expect them to; they encapsulate them. When that happens, you have a few seconds to destroy the encapsulated creature for a bonus (in the form of sweets), before it dissolves away.

Another use that the largest shots can be put to is launching the kid into a

spin, in which he becomes an indestructible weapon himself for a short while. Incidentally, he'll also go into a spin if he falls too far, so you can't die in this game simply from missing your footing on the edge of a platform. Spinning is not only useful for taking out several Bad People at once, it is frequently the only way of getting to where you need to be, on a high platform for instance.

Here's yet another occasion on which clever design becomes apparent. You can combine the two effects of the large shots by trapping a bad person then using another to put you in a spin and colliding with the trapped creature. This yields a bigger bonus than you would otherwise get if you just walked into it, on the basis that, the harder you hit the creature, the more sweets it produces.

If you've read some of the reviews of the other 16-bit versions of Magic Pockets, you may be surprised at how much more eulogistic this review is compared to those. There's a very simple reason for this: the Amiga and ST versions did suffer from being slightly more difficult to play than the PC version. Simply correcting this difficulty has elevated the game from the level of the ordinary to the ranks of the 'must buys'. I certainly found it had that 'just one more go' quality. Try it, and I'm certain you'll enjoy it.

LAURENCE SCOTTFORD



REQUIREMENTS

A joystick is preferable, as is a 286 or better, if you want totally smooth scrolling. This game will happily play from the single distribution disk.

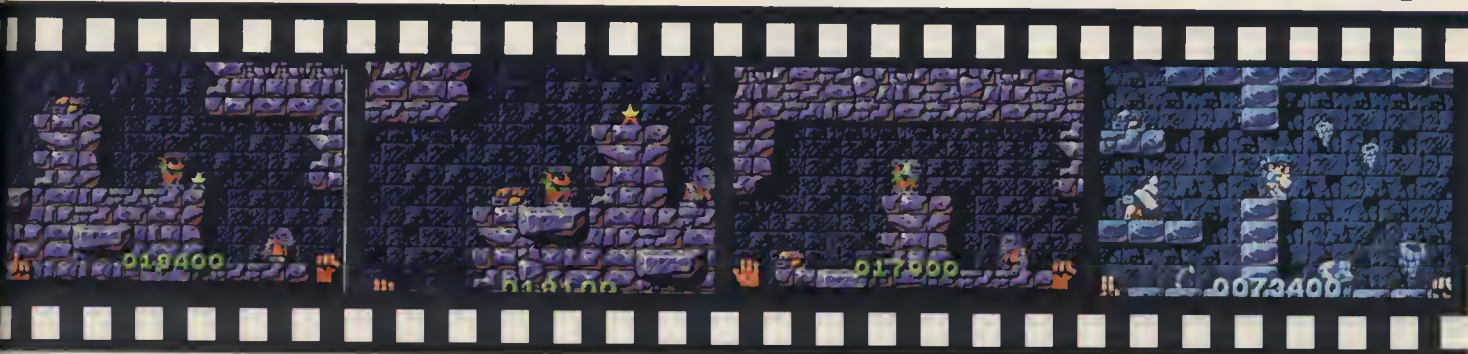
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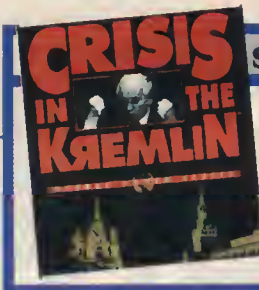
One of the power-ups is a silver star. The number of these you collect affects what object you'll get when you collect ...

... a gold star. Obtaining this is required if you want to get the most powerful power-ups in the game. These are extremely useful objects like ...

... the face mask, which will protect you from attack while you are wearing it, but can't, unfortunately, be used with bubble gum ...

... or the transporter helmet which will whisk you away to a secret and heavily bonus laden location and then bring you back several seconds later.





SOFTWARE REVIEW

- Crisis in the Kremlin
- MicroProse
- £39.99
- (0666) 504326

There is a view that Gorbachev knew he was committing political suicide when he initiated his sweeping reforms. The ball could only swing in one of two ways; either the hard-liners would find a way to reassert their authority and put the Soviet Union firmly back on the Brezhnev track, or, as was eventually the case, even more radical elements bubbling under the surface of the Soviet political scene would emerge from relative obscurity to take the reins of the World's second superpower.

It's easy to see Gorbachev's custodianship as ending in failure, but he was successful in one very important area; he managed to keep both the hard-line communists and the radicals in check long enough for the reform process to become irreversible. Eventually the snowball effect came into play and even Gorbachev's removal from power couldn't halt it.

Where Gorbachev did go seriously wrong was in assuming that Marxism could still work as the fundamental doctrine upon which the Soviet lifestyle is based. The subsequent success of Russian President Boris Yeltsin is undoubtedly partly due to his strong stand against communism and his realisation that it, and perhaps even real socialism, are incompatible with building a strong free market economy for the Soviet countries.

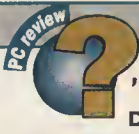
The question of real interest – in this game at the least – however is 'could the events of the last half decade have been resolved any more satisfactorily?' This political simulation goes some way towards providing an answer to that question, and whichever way you look at it, the answer seems to be no. The objective of the game is to take on the responsibilities of the President of the USSR and remain in power from your inauguration in 1985 to the present day. The key lies in maintaining the delicate balance between making real progress in the right direction and not upsetting the other political factions. If you go too far, too fast, you'll end up being 'removed' from a position of power because of your radicalism.

You can take one of three lines. The closest to genuine events is that of the reformists led by Gorbachev, in which you try to restructure the country radically without throwing the baby out with the bath water; in other words, communism stays and the Soviet Union remains a political whole. An alternative, which many will want to try, is the Nationalist path, as represented by Yeltsin, where the ultimate aim is to replace the

Communism and the Soviet Union have crumbled – now you can try your hand at bringing about an alternative ending in this political simulation of the USSR

heavily centralised USSR with a looser coalition of independently governed states. Finally, you can take the hard-line approach advocated and practised by Brezhnev. This is characterised by an iron grip on the affairs of member and satellite states, strong military emphasis and a distrust of the West.

When the game begins, you inherit the essentially conservative policies and budget of Chernenko's year in power, but every year you have the opportunity to set your own policies and budgets. To do this, you must determine the value of areas like trade from the ultra conservative strict control through some restrictions to a democratic total lack of control. Each policy has an actual level and a perceived level which can be used to your advantage to make 'unnoticed' policy changes. If, for example, your policy on press and media is restrictive but seen as being more democratic, you can probably ease the pressure a little without upsetting the old guard too much.




ALTERNATIVELY...

'NAM 1965-1975

Domark, £35.59

Matthew Stibbe's Vietnam simulation has you playing the President of the United States (either Johnson or Nixon), but your policy making is specifically geared around America's involvement in the Vietnam War.





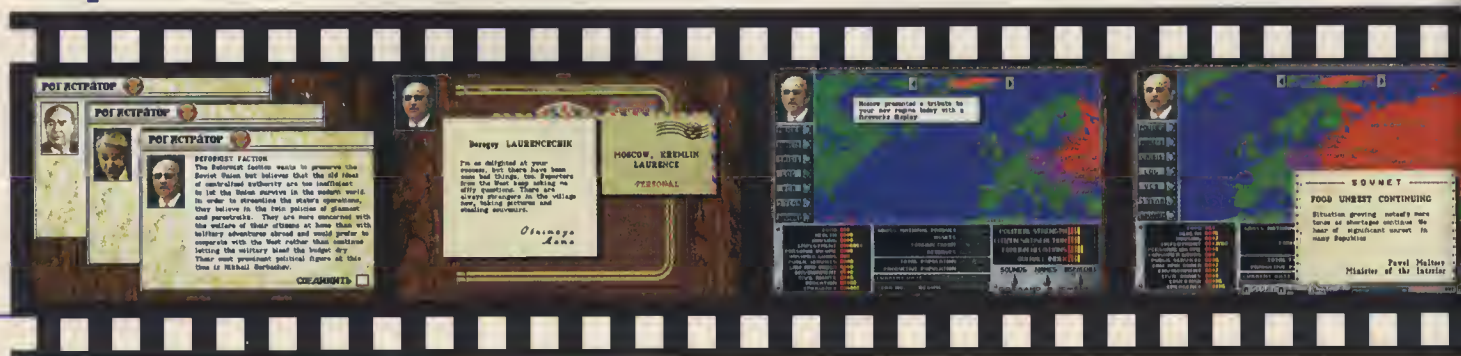
TWO MINUTES OF DECISION MAKING

I've decided to play Gorbachev and see if I can make a better job of holding the Union together.

Ain't that nice? A letter from my old ma. Not sure I like all this bouncing on my knee stuff though.

Am I being completely paranoid or do things look suspiciously rosy at my Inauguration, what with a fireworks display and all.

I knew it couldn't last – one day in office and I've got a serious food problem to deal with.





Life in the Soviet Union. Can you make it more bearable, or is misery the order of the day?

Crisis in the Kremlin

Budgets prove to be a lot more complicated, and it may take you a couple of games before you really get the hang of this delicate balancing act. Budgets can be handled in several ways, you can either dole out cash to generalised areas, or you can allocate every rouble specifically to the correct departments. I found that the best approach was to concentrate on the balance between one or two areas until you become accustomed to the way it all works and then broaden your range in subsequent games. Help is provided in the form of a strategy chart which shows how changes in spending in one area will affect other aspects of the Soviet machinery. Using this to gauge the possible reaction from other political factions will save you from many votes of confidence or, even worse, extended holidays in the Crimea because of failing health.

Most of the game is played on a low-tech style screen which consists of a scrolling map, various switches for implementing policy decisions and bar charts which monitor your progress. The game runs, more or less, in accelerated time, with months

passing every few minutes, bar pauses while you implement budgets and policies. The nice thing about being the boss is you don't actually have to do anything! You have plenty of advisers who are happy to make decisions for you, and, if you wish, you can just sit back and watch events without intervening. As the manual suggests, this is a good way of learning how the game works.

Your progress is indicated by a series of bar charts covering areas like food and housing, which monitor how desperate or otherwise the situation is. You can also get a more detailed report on any of these areas at any stage of the game. Additionally, you will be shown newspaper reports and television broadcasts detailing major events. The broadcasts, disappointingly, only amount to a few seconds of fuzzy digitised news footage with some shots being repeated. Whenever your departments need to contact you urgently they send a message via the telex machine, or, if less urgent, a memo or letter. All of your despatches are stored and can be reviewed later in the game.

The only problem with this simulation is that it is necessarily limited. The definite restriction in the number of combinations of problems and solutions becomes apparent after only a few games. Crisis will perhaps be most appreciated by educational establishments with courses in Russian or European Studies, and to them it is highly recommended. To the interested games player, I'd say this is a thoughtful piece of software which will provide you with a welcome, if not very longlived, relief from more traditional games.

LAURENCE SCOTFORD



REQUIREMENTS

Taking up 15Mb of hard disk space, this is a heavyweight simulation. You really need a mouse to get the most out of the game.

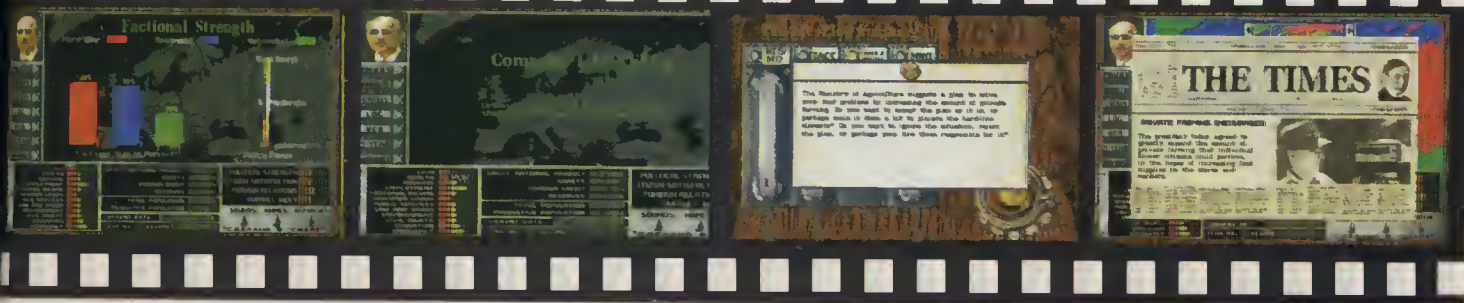
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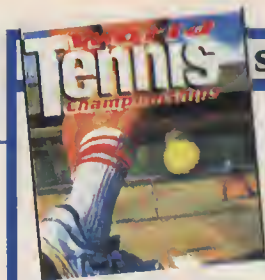
I'd better check up on my current political standing before I start making important decisions.

In addition, I'll need a run-down on how various other aspects of Soviet life are looking at the moment.

A crisis already! Should I allow private farming and risk upsetting the old guard? What do my advisers think?

Looks like I've got away with the farming ploy, but how long can I go on pushing reforms through? And how long will my luck last?





SOFTWARE REVIEW

- World Tennis Championships
- Mindscape
- (0444) 246333
- £34.99

Having held back its release since last winter, Mindscape has finally launched World Tennis Championships (WTC). Everything about the game, from the 3D views to the excellent action replay facility, suggests that it's the latest in the '4D Sports' series, though why it's not actually called '4D Sports Tennis' is a mystery only Mindscape's marketing department can solve.

No matter. WTC's range of options, tournaments and customisation features is more impressive than any predecessor. Take these, for example: 45 potential opponents (and you can create another 30 of your own); toggle between three sound modes and two graphics modes in-game; alter the game speed, movement control, sound options, calibrate a joystick and vary the amount of detail on screen; practise every shot ad infinitum; enter a tournament, play an exhibition match, or embark on a whole new career.

A couple of these features stand out from the rest. The player list is typical of the game's presentation touches, incorporating five years' worth of statistics in all the major tournaments, your ranking (you start at 46th in the world), and a neat cus-

Summertime, and the living
is easy ... unless you're a
tennis pro aiming to make
his way to the top



Real pros know that the secret of success lies in the hours spent practising. WTC even allows you to replay your greatest pre-match moments in front of an audience.

World Tennis Championships

tomisation screen. This allows you to name your player, set his height and weight, allocate points for speed, acceleration and endurance, and alter the colour of everything from the player's skin to his socks. Then there's the practice facility. This teaches

you almost 50 different types of shot, from simple ground strokes to backhand corner lobs, and includes all the skills you need to be a competent player, such as smashing, volleying, passing down the line and, of course, serving.



TWO MINUTES ON COURT

Having trounced your opponents in the exhibition matches and spent hours, nay, days, perfecting your shots on the practice courts, it's time to launch your career as a tennis pro. How about the Canadian Open for starters?

Your opponent is Michael Wall (who he?). Having played a number of more conventional tennis simulations, you might feel more comfortable with this 'camera' view of the action. That ball is well on its way to being an ace.

Feeling more confident, you decide to try out WTC's innovative first-person viewpoint. This puts you right inside the body of your computer player: you see what he sees. This isn't too bad when your eyes are on the court ahead ...

... but the effect can be rather stomach-churning when you serve. There are a couple of impressively realistic touches. First of all, the view switches to your arm, complete with wristband of course ...

CANADIAN OPEN

Player Selection
Michael Wall
John McEnroe
Boris Yel'tsin
Andre Agassi
Pete Sampras
Evander Holyfield
Mike Tyson
Ricky Pataca
Ed Bradley



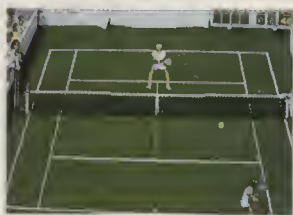


ALTERNATIVELY...

Pro Tennis Tour 2

Ubi Soft, £29.99

This is a complete re-write of the original. The three playing surfaces, tournament play and a trio of difficulty levels are all there, but there are bags of extra features, too. You can play a one-off friendly or an organised calendar of tournaments, create your own character and check his/her statistics, or just program a ball machine and practise your shots. There are three difficulty levels and a comprehensive list of statistics – you can even save whole careers to disk. All these extras would be useless without a good, solid game of tennis behind them, and that's exactly what Pro Tennis Tour 2 provides. Pity about the Ad Lib sound, though.



After the impressive presentation, the tennis itself is slightly disappointing. WTC's optional first-person 3D viewpoint is a major innovation and brings it into the realm of simulation – you look at the ball as you toss it into the air before serving, and your 'eyes' track it when your opponent hits it back to you. This sounds fine in principle, but the reality is disorienting and gives you little feeling of control, whether you select the computer to guide your player to the best position for striking the ball or do it yourself.

The 'camera' view, despite offering great flexibility by allowing you to view the action from almost any angle, is little better. Even without the bitmapped crowd and umpire graphics, the ball movement and player animations (at the minimum 12MHz configuration) are unrealistic and unacceptably jerky.

However, even extra processing speed won't help the poor control method in both the 'camera' and first-person 3D modes. The joystick in particular is slow to respond, the mouse is clumsy even when the computer is doing most of the movement work for you, and the keyboard has all the usual drawbacks associated with its use in arcade games, the main one being that you have too many keys and not enough fingers.

On the positive side, WTC is the most comprehensive tennis game available, allowing you to do just about everything short of triumphantly leaping over the net at the end of a match. As with the real thing, timing and power are crucial to your stroke play, and it's satisfying to see your hours spent on the practice court being put into action during a game.

... then the perspective changes as you toss the ball high in the air. Timing is crucial; holding the space bar or fire button down you set the power of the shot, and decide the exact moment of contact between ball and racquet.

Unfortunately, none of your opponents is a dummy, and the only way you're going to win is by doggedly practising until you're perfect. If you can remember what to do without panicking, you're well on your way to that first title.

Having won a game handsomely, you can boost your confidence and feed your ego by making use of WTC's excellent replay facility. This is the 'camera' view, which can be customised to provide more angles than you'll ever need.

Alternatively, and just for the sheer fun of it, you can replay every single shot from the first-person viewpoint. Watch out, though: to guard against excessive self-indulgence, only one minute of replay time is allowed.

As with all the 4D Sports series, WTC has a host of in-game features which give it an impressive televisual feel. Statistics are available in practice or during a game, and you can examine your own or your opponent's records. You can reduce the detail on screen to speed up the frame rates, and you can even slow the speed of the ball to make the game easier.

However, the most interesting extra is the video-style action replay screen. This records a minute's worth of action, and allows you to review every shot you played to see where you went wrong, or to gloat over your successes. All the usual video controls are included, and you can adjust the camera for a replay from any angle.

WTC is a refreshingly different tennis simulation, and it is rewarding to measure your progress as the hours pass; but what it gains in innovation it loses in pure, arcade-style enjoyment. If you're looking for an instantly accessible tennis game which won't stretch your talents, forget it. However, if you're prepared to spend hours mastering the control method and the strokes, and you have a powerful PC to handle the graphic frills, it's worth a look.

GORDON HOUGHTON



REQUIREMENTS

World Tennis Championships is quite specific in its demands on your hardware. It can only be played from hard disk (where it uses up 1.65Mb), and the recommended minimum processor speed is 12MHz. Any slower than this and the action suffers – and if you want the full crowd graphics and all the frills, you'll need 16MHz or faster. You also need at least 575K RAM, and EGA graphics, before you can even think of picking up that racquet.





SOFTWARE REVIEW

- The Manager
- Software 2000/US
- Gold
- £37.99
- (021) 625 3366

So you think you could do a better job of running your team than the clapped-out old has-been currently in the manager's chair?



The Manager

The grand old original, 11-year-old Football Manager is now practically unrecognisable as a computer game, but it set the standard for the managerial simulation: select your team according to various strengths of attributes like form, skill, and fitness play through a fixture list, see highlights of the matches, and attempt to rise through the divisions.

This latest incarnation of the genre, The Manager, is a translation of the German company Software 2000's Bundesliga Manager. Using teams from the first three English divisions (the arrival of the premier league has been ignored for the purposes of the game), plus all three European competitions, the manager of 1992 has sponsorship, ground improvements, training regimes, admission prices and a host of other options to contend with, as well as the nitty-gritty of team selection and using the transfer market to shore up a leaky defence.

The Manager is best played as a multi-player game, with up to four players each taking on a team. These are selected at the

beginning, before you decide whether to play a one-season game (start in the first division and nothing less than the championship is good enough), three season game (start as a lowly team in the first division and stay there for three years), or a continuous game (start in the third division and survive or sink through the seasons). You can play each at five different difficulty levels.

The make-up of your team can be auto-selected by the program, or you can override and pick your own. Each player has a fitness, skill and form rating, which fluctuate during the season, according to the training you organise, and motivation (players' form improves with a winning run, otherwise declines, especially if they're not rested). They can also reach exhaustion level, which makes them more susceptible to injury, or be suspended after bookings. Frighteningly, injury and/or suspension could have your entire forward line wiped out by Christmas.

Tactics become reasonably simple after a while. You can look up the next fixture and check your average strength rating



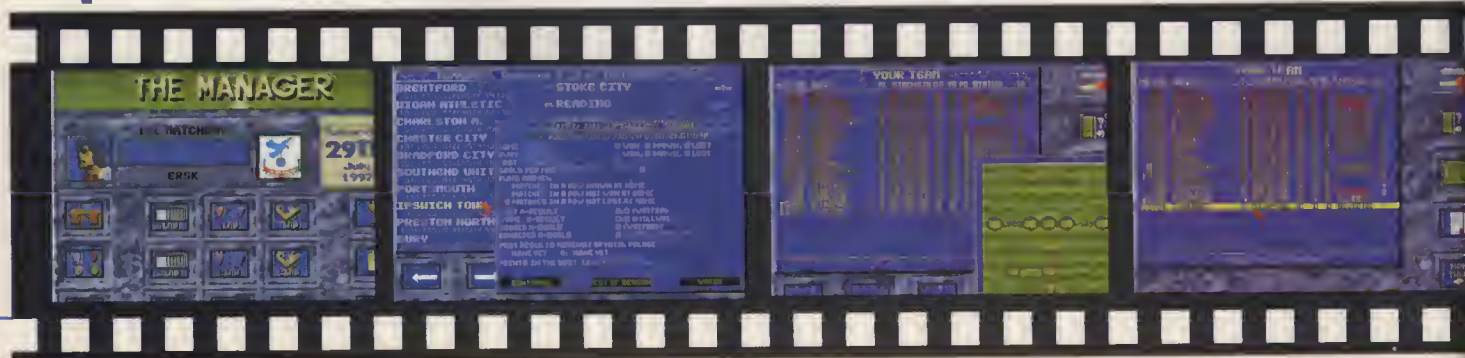
NINETY MINUTES AT PORTMAN ROAD

The lads are all keyed up for the first match of the season. However, to find out who we're playing and assess their strengths and weaknesses, access the fixture list here.

From this wealth of statistics on Ipswich Town, I can see that with an average strength rating of 44, they're stronger than us on 40. This is an away match, so it's going to be tough to get a result.

I'm hoping against hope this match will be won in midfield, so I'm going to try to play to Palace's strengths (in the game, anyway) by electing to play a 3-5-2 formation team.

OK lads, this is who's playing I Wright for starters, despite the fact I thought he'd gone to Arsenal. I'm sure we rated him more highly than this team list does, anyway.

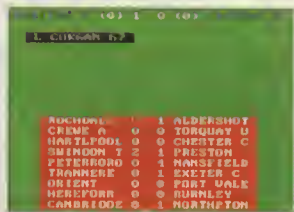




Football Director 2

D & H Games

Text-based managerial simulation comprising basic team selection, plus a fair few of the extraneous training and sponsorship style options. It's a single player game only, but it's the lack of any pictorial displays that really make it look dated. Hence, D&H is about to launch ...



Multi-Player Soccer Manager

D & H Games, £TBA

This looks as though it will be very similar to The Manager in terms of options and gameplay. The screens are graphic-based, though not as detailed as Software 2000's, but there are still no illustrated highlights from the matches.



against the opposition. It's unlikely that in the time available you'll be able to improve any one aspect dramatically, but you can alter the team formation and positional play in order to try either to save a draw away, or snatch victory over a better team at home. If any part of your line-up is looking particularly weak, you can adapt the training to boost their ratings, or send the whole lot off to training camp — pricey, but worth it in the closing stages of a season if you need to win matches to go up.

Having made your selection, you get to watch highlights of the match in a screen window. These are actually quite good — with plenty of different animations to illustrate goals or near-misses. Struggling to win a crunch match, there's a definite sense of suspense and tension as the time ticks away and your breaks towards goal are frustrated by opponents.

Items such as organising shirt sponsorship, implementing the ground improvements or fixing the admission price may seem peripheral at the start, but you need ready cash, or you can't send your team to training camp, nor make too many forays into the transfer market if any of your team fall by the way-side — and they do seem to pick up long-term injuries and suspensions at an alarming rate.

The manual is a stilted read and some of the explanations aren't entirely clear: "During this display ... only the status and the trend from the eleventh player on are no longer visible" is one particular line I still haven't managed to fathom. This is annoying, because you need the manual: every single menu option is portrayed iconically, and not always very intuitively, so you'll need to learn the whole lot off by heart before you're using the game with any fluency. To get halfway through the season before you realise that all those red zeroes mean your players are knackered isn't conducive to fighting a successful promotion campaign.

If the manual translation is nigglingly unsatisfactory, the on-screen transcription of team and player names is worse. My own favourites are Blackburn Rover (and likewise, Tranmere Rover), and Charlston Athletic. While brownie points have to be awarded to anyone prepared to type in reams of players' names to satisfy those who want authenticity, the appearance of "Matyn" and "Thopson" in the Palace line-up give it an air of surrealism.

Played with real-life opponents, much of the fun comes from the matches between those playing and the fluctuating fortunes of each during the season. Played solo, the repetitive nature of the strategy involved means that by February, the season is becoming something of a grind — as it is probably is for real football managers.

CHRISTINA ERSKINE



REQUIREMENTS

The Manager must be installed on to a hard disk, and will take up just under 2Mb. Make sure you have around 565K free in RAM to load the game, and remember this must include your mouse driver. Comes on two floppy disks.



And Ipswich snatch an early goal with more than a suspicion of offside, I thought, Trevor. The lads will have to dig in and keep their noses to the grindstone now.

A courageous save by Matyn (who?) to keep our heads above water in the match. These replayed highlights are certainly keeping the crowd on the edge of their seats.

Gooooaaaallll! Fine shot out of the goalmouth scramble by Wright. There's everything to play for now, as Palace get back on level pegging at the start of the second half.

After the final whistle, the day's results are listed and the new league table compiled. It's only the first Saturday of the season, but already I have a certain sense of déjà vu about the whole thing.



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PC REVIEW'S BEST BUYS

This month's PC Review Recommended games are Indiana Jones and the Fate of Atlantis and Jimmy White's Whirlwind Snooker. You'll find these titles on specially dedicated racks in 100 of the leading software stores around the country. Set up in conjunction with Centresoft, the PC Review Recommended scheme helps you to make the right choice when it comes to buying your games.

Previous games to have received the PC Review Recommended accolade are:

LURE OF THE TEMPTRESS

Virgin, £35.99

The first home grown graphic adventure that comes close to beating Sierra On-Line and Lucasfilm at their own game. A clever realtime system allows complex interaction between the main character and others.

HEROES OF THE 357TH

Electronic Arts, £34.99

A welcome departure from recent trends in flight simulations, this one makes no pretensions to being the most detailed, accurate or comprehensive simulation ever written; it's just very playable and good fun.

ULTIMA UNDERWORLD

Origin, £39.99

A departure from the top-down isometric viewpoint of the other Ultima games, this spectacular role-playing adventure features the best 3D engine yet seen on any game of this type.

SHADOWLANDS

Domark, £35.99

The best British role-playing game to date, Shadowlands features a unique lighting system which creates truly atmospheric locations and situations. Tackle dangerous creatures and fiendish problems with a carefully created party of adventurers.

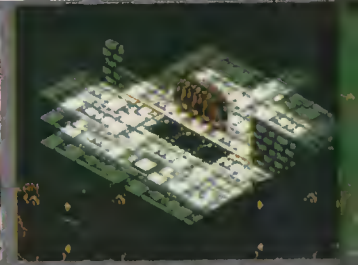
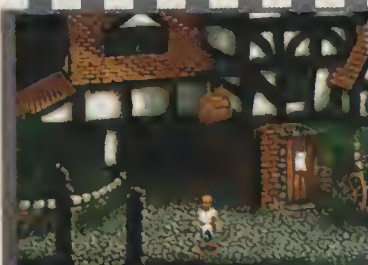
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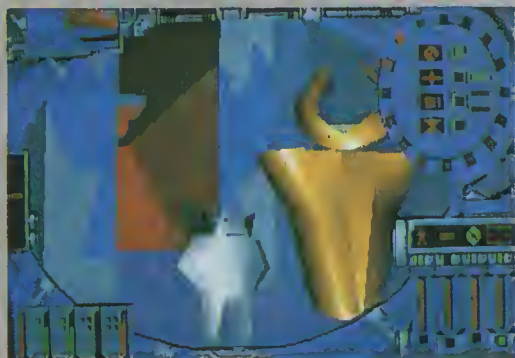


WHATEVER HAPPENED TO...?

If you've eagerly turned to the review pages to check out a game that has been previewed and advertised recently only to be dismayed by its absence, you'll probably find it in our lame excuses' Hall of Fame.

CYBERCON III

We've been referring to it off and on since the first issue, and we were hoping to squeeze the PC incarnation of this 3D classic into this issue, but sadly a disk came our way just slightly too late for inclusion. Next month, however, we'll bring you a full report on how the Assembly Line's conversion shapes up on the PC. First impressions are that this is the best version of the game yet.



A-TRAIN

You've heard all about the latest wonder from Maxis by now, and we've finally got our hands on a copy. The editor herself has been giving the game a thorough work out, and although it was a late arrival for this issue, A-Train will be pulling into the reviews pages well on time for the October issue. Read next month's review to discover if this train sim is the bees knees or wet enough to be a simulation of British Rail.



We would love to be able to review every game that ends up in our postbag, but if we did that PC Review would soon turn into an expensive doorstep. So we compromise by reviewing an interesting selection from the software available, not necessarily the best! But to keep everyone happy here's a quick round-down of other games that should be in the shops soon.

GREAT NAPOLEONIC BATTLES

Impressions, £29.99

Great Napoleonic Battles appeals immediately because it is so easy to get into. It is very much like Battle Isle in that its control method allows you to execute commands with ease. It covers three Napoleonic battles: Quatre, Marengo and of course Waterloo where he was finally sent packing by the British troops. You can play against either the computer or another human player. Control is simply a case of clicking on artillery, infantry or cavalry pieces, and issuing movement or attack directives.

Extra options are impressive: you can make your own maps, your own men and also set the statistics by which the war will be played!. Map-maker is a utility enabling you to set the size of the battle area, the shape and even the terrain. Similarly, Men-maker lets you edit your troops and Warmaker lets you change the rules of combat, so that, for example, if your men are forced to retreat they may fall into disarray and lose their usefulness.

The only annoying thing about the game is that there appears to be a bug which corrupts the cursor occasionally

There's a reasonable Ad Lib soundtrack and both the EGA and VGA graphics are reasonable, if a little simplistic.

This is quite a good game which

will appeal to beginners as well as veteran strategy players.

AIRBUCKS

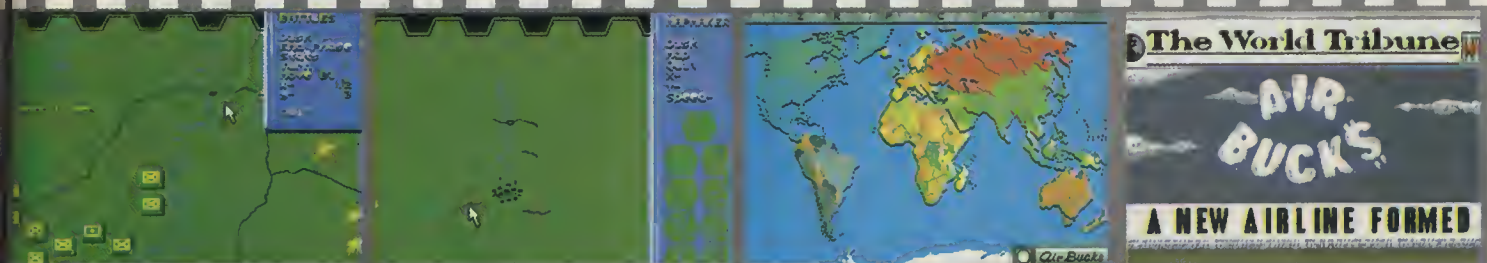
Impressions, £34.99

The plot of this game is very simple. It is 1946 and you have just founded your own airline, Airbucks. Your aim is to make lots of money and see off the three other airlines that form your competition. You start with just one aeroplane (which only holds 21 passengers) and £100,000. The first thing to be done is to buy the landing rights to an airport and start transporting passengers. There are masses of variables to mess around with and change in the game and it is these that make the game really slow. Before each flight you have to maintain the plane and select the destination, the ticket price, the seat formation, and the comfort level for the passengers. All this becomes very tedious and repetitive in a very short time, making the game a chore to play rather than a joy. This is compounded by the difficulty of the game. The opposing airlines perform very well, and making a profit is extremely difficult.

The game's plus point is that it is very detailed with air strikes, oil price rises, and so on, and the graphics, although functional, are used well. But even these, when offset by the game's extreme complexity and lack of pace, aren't enough to hold the attention for long.

Great Napoleonic Battles

Airbucks



Welcome to another month of guides, maps, diagrams, solutions, hints and advice. Ultima Underworld leads the way, followed by more maps from Heimdall and your own tips ...

A GUIDE TO THE STYGIAN ABYSS — ULTIMA UNDERWORLD

PART TWO — LEVEL 5 AND BELOW

This is the concluding part of the guide to the superb 'Virtual Reality' role playing game from Origin Systems.

LEVEL 5 — THE LIZARDMEN

Level five is not as combat-intensive as the previous level and there are only a handful of NPCs. Level five consists of three separate areas — the main area, the mines and the tombs of the Stygian Abyss. The latter is accessed via the Bullfrog puzzle on level four. It contains many graves and also the hilt of the broken sword of Caliburn. When you have both bits, take them to Shak to have repaired (have gold ready!).

The mines contain a mother-lode of Zanium. This ore is needed by the alchemist Anjor, who will reward you well.



- 1 — Garamon's Grave
- 2 — Crossbow
- 3 — Gargoyle's Grave
- 4 — Lady Gwytha
- 5 — Sir Nos
- 6 — Sir Sturmikov
- 7 — Book Thief's Guide

- 8 — Lahn: Identify possessions + Red Potlon
- 9 — Broken Hilt
- 10 — Plate Armour
- 12 — Thieves Guide Vol 1 + Flute leather gloves, food
- 14 — Shrine of Virtue

- 15 — Thieves Guide Vol 2
- 17 — Scroll 'An Corp Mani'; Blows to Undead
- 19 — Mace
- 23 — Scroll of Gate Travel

- A — Mandolin
- E — Eyesnack
- J — Judy
- K — Knee-Knibble
- R — Ring of Humility

The mines can only be entered by means of the mine dispatch area. One of the ghouls used to work in this area and will divulge its secrets. The mine dispatch area will also give you a scroll. The scroll will take you to an item which is tactically very useful and will make life much easier.

Eyesnack and Judy will give you important clues to two of the talismans — for one remember to keep in tune later. The previous level should have told you how to get the Ring of Humility and this completes level five.

At this stage you should have the following talismans:

Standard of Honour — (level four:

Dorna Ironfist)

The Taper of Sacrifice — (level three: Zak)

The Ring of Humility — (level five: via Derek on level four and Goldthirst on Level two)

The Sword of Caliburn — (hilt on level five, blade on level three)

LEVEL 6 — THE REALM OF THE SEERS

Your adventurer should be quite battle-hardened as he or she enters level six —

the Realm of the Seers. This is the most 'character' involved level in the game, and is dominated by the red hot lava flows threading through the landscape.

Remember you must find the eight Talismans of Cabirus, four should already be in your grasp, the remaining four are all available from here.

The lava will fry you quite quickly, so if you are walking on hot coals, either use your spellbook, or have some dragonscale footwear made up. Everywhere on level six you will find seers willing to speak to you. Most have at least a snippet of useful information.



- 1 — Standard of the Seers
- 2 — Dominus
- 3 — Various Emeralds, Press Silver Button to Tele to Level 1
- 4 — Private property
- 5 — Gralwart & Fyrgen
- 6 — Nilpont
- 7 — Bronus
- 8 — Rantru
- 9 — Leeches Flask & Torches
- 11 — Fishing Pole & Candle

- 13 — Secret Door
- 14 — Jewelled Shield
- 15 — Books: Volume In Foreign Tongue
- 16 — Scroll of Tremor
- 17 — Origin of Moongates
- 18 — Great Troll
- 19 — Book of Honesty
- 20 — Magical Scroll
- 21 — Button Opens Door up to 22
- 22 — Gate Travel scroll & Wand
- 23 — Various Incense, Food etc

- A — Anvil
- D — Stairs Down
- I — Illomo
- L — Lounnon
- O — Fire Room
- R — Red Potion
- T — Sheet Lightning Spell
- U — Stairs Up
- W — Wine of Compassion
- X — Shrine

Dr Owl is just the tonic, especially if you have freed his errant assistant Murgo. This will lead to a small celebration, and a tippie you've been waiting for.

Gralwart will tell you how to get the elusive VAS stone. This is the most difficult runestone to obtain, and is of course needed for the 'biggie' spells of invisibility, daylight, greater heal, flying, and gate travel. This last spell is particularly useful later — so it is well worth cracking this runestone. If you're having difficulty, walls are not what they seem, and later jump for joy to reach higher things.

Frygen gives you a subtle, but very important, hint to one of the talismans. The action must be repeated three times to get the full picture, then as surely as night follows day, you're on your way. This is without doubt the most difficult of the talismans to find. It's really out of synch

with the rest of Underworld — you will receive small clues from Louvon and there is a musical connection back to Eyesnack, the ghoul musician. So combine those clues with 'inner visions', and then seek further directions from the shrines. It is a bit tough, but think laterally, and vertically, and you'll be OK.

Morlock is missing something, and will give you a timely clue if you return it. Nilpont will tell you of the Golem, he must be successfully taken on to get the Shield of Valour. If you can't beat the Golem, build up your character and return later — he must be beaten to complete the game. Again the spells involving the VAS stone will help.

One way or another you should now be on the trail of all eight talismans — the exact purpose of them is yet to be revealed

LEVEL SEVEN — TYBALL (AND BEYOND)

WARNING: Magic does not work on this level — this is due to a 'anti-magic' field that radiates from deep within the domain of Tyball. Your character will need to be well developed to survive this level. If you're struggling, go back and do some monster bashing!

Due to the lack of defensive and offensive magic, it is likely you will get killed several times. This can be worked to your advantage. Make sure you have replanted the silver sycamore, say back on level one — when you get the VAS stone on level six, you should be able to cast gate travel. Leave the moonstone (from level five's mine dispatch area) on level six — at the top of the stairs going down to level seven.

In this way, if you get killed or (if things



are not looking very good) get yourself killed, you will then resurrect back at the Silver Sycamore on level one. Your magic will automatically return, cast gate travel and you'll end up on level six, poised at the top of the stairs, ready to rest and then to descend 'once more unto the breach'.

This is a bit of a fiddle, but is an excellent way to conquer this very tough part of Ultima Underworld. If you follow this course, make an 'ammo dump' here as well, at your 'bus stop'.

When you enter level seven for the first time, make sure you have some port with you to give to Cardon. He isn't much help, but he will tell you about a lost medallion. This is necessary to explore the bulk of this level, via the south-west corner.

Don't be too cocky about the Lurkers — these are a different type of cephalopod to those push-overs on level one. They are far tougher, and will poison you. Later you'll come across anti-poison rings, but with no magic to cure poison, these creatures must be treated with respect.

Working up into the middle of level seven, you will come across the seer Naruto. He has priceless information and must be spoken to in depth. He will explain why there is no magic and suggest a way to solve this problem.

Further north from him are a series of jail cells, these house several useful souls who will assist. Dantes, Griffle and Fintor all have pearls of wisdom. Bolinard must also not be ignored.

The main objective of level seven is to get to Tyball — this can only be achieved by negotiating the maze. A map will show the way through the Chasm of Fire, but the maze itself is complex and deadly — one square off the correct path and you can see your vitality draining away, with no magic soon you will be dead.

The maze cannot be navigated by trial and error — you need an item to keep you on the right path. This takes some doing to find, and you will need to go down to level eight and do some bargaining. This area is entered from the fiery canyon — a legitimate tactic here is to collect the moonstone and place it strategically in the canyon. Proceed as far as you can and when you die, you will resurrect at the Silver Sycamore. Magic is negated on level seven, but doesn't affect 'incoming' gate travel spells. As a result, if you site the moonstone on level seven you can teleport back in all rested and fit.

Once you've sorted the maze, Tyball attacks — remember conversations about orbs and you may be able to break his spell!

This fight may need a couple of attempts to get right, but eventually you will be the victor — Ariel will be freed and that should be that ... unfortunately not so, there is one fairly sizeable loose end that you cannot leave undone ...

Tyball's defeat will allow you to enter

the parts of level eight you couldn't reach before. Carasso holds the last pieces of the jigsaw. He should send you to put an old matter to rest — listen carefully — all is revealed.

It's downhill from here, find the three part key and open up the shrine, but where's the key, and what to do when you're in the shrine?

If you are stuck, go to jail — see Smonden and this will take you back up the abyss, bravely where you have not been before. Two parts of the key should be yours — the third is just a snapshot. Follow ghostly advice and your long quest is almost over. Rumours of a level nine? Surely not, but do you recall that vision long ago, on level one?

MANTRA'S — PART THREE

| | |
|--------|---------------|
| ROMM | Traps |
| SOL | Casting |
| LAH | Lore |
| IMU | Mana |
| INSAHN | Cup of Wonder |
| FANLO | Key of Truth |

THE RUNESTONES

LEVEL ONE — B, I, J, L, O, S.

LEVEL TWO — H, M, P, U, Y.

LEVEL THREE — B, D, M, R, W, Y.

LEVEL FOUR — A, C, G, I, Q.

LEVEL FIVE — G, J, N, R, S, T.

LEVEL SIX — E, F, K, V.,

Obtaining the VAS stone is the most involved — Gralwart holds the key.

ADDITIONAL SPELLS

There are certain spells that do not appear in the game documentation — they are 'discovered' by exploration. Here are some of them. If anyone knows of any others, please write in and let us know:

| RUNES | SPELL |
|----------|-----------------|
| VKC | ARMAGEDDON |
| AS | CURSE |
| UP | JUMP |
| KM | MONSTER |
| | SUMMONING |
| VOG | SHEET LIGHTNING |
| ACMSMITE | UNDEAD |
| IS | THICK SKIN |
| YP | WATER WALK |



| | | |
|---------------------------------|-------------------------------|-------------|
| 1 — Excellent Helmet | Regeneration | C — Carasso |
| 2 — Excellent Crossbow & Quiver | 6 — Jewelled Bow | X — Shrine |
| 3 — Ankh Pendant & Skull | 7 — Excellent Leggings & Mace | |
| 5 — Ring of Mana | 8 — Wizard's Bones | |

Continuing the replies to Issue 8's extra-length Help! Wanted page, we bring you all those we couldn't fit into last month's page. Normal service will be resumed as soon as possible.

Sorcerers Get All The Girls for Chris Lawton, Lytham St. Annes.

After having dinner with Tickingclock, go to your room and sleep. Then type 'Get all. Go east then up. Skonn statuette, climb statuette, get box, open box and read spellbook.' You now have the Kabbul spell.

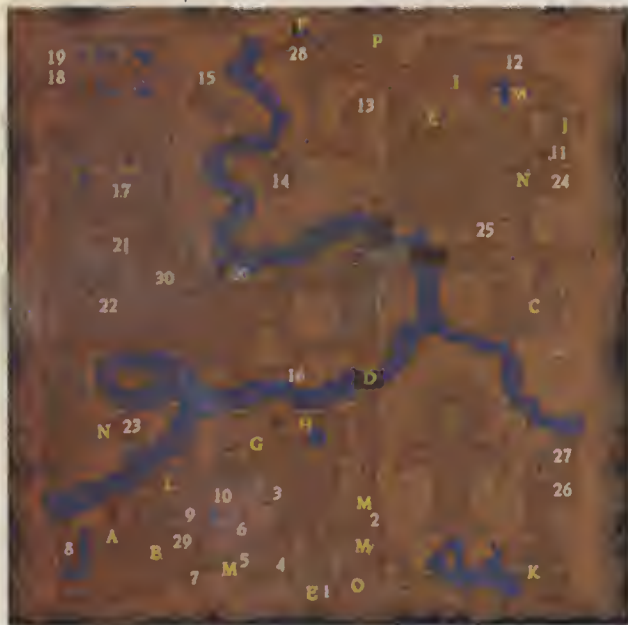
Ken Gregory, Crosby

Might And Magic III for Paul Cooper, Kidderminster: Hologram sequencing card no. 1 is found in the Fortress of Fear (B2 area). To get it, pull the levers until only four heads remain in the centre room — one in each corner. Then step into the square. If you want to take the easy route, teleport to grid reference X26, Y12 and face off the mummy king. Greywind's clerical daughter is Circle. The names are anagrams. For Blackwind, don't



ULTIMA UNDERWORLD – AN APOLOGY

You may have noticed last month's deliberate mistake with the Underworld maps. Sorry if you found yourself wandering around level 1 aimlessly. Here's the correct map ...



1 — Sack (food, dagger, map, torch)
2 — Sack (candles, mushroom, cudgel)
3 — Bowl, axe, torch
4 — ORT and IUX stones
5 — Pack (scroll, rune bag (BET, IN, LOR and SANC stones), red key)
6 — Food, leggings
7 — Bedroll
8 — Rotworm, wooden shield, lever to open door at A
9 — Shortsword
10 — Two poles,

sling, cauldrons
11 — Bragit's cell, pole
12 — "Keep Out"
13 — Three spikes, leather gloves, food
14 — Leeches, red gem
15 — Wolf spider (thread), leather vest
16 — Pipe, food
17 — Goblin
18 — Lanugo
19 — Vernix
20 — Chest (MANI and YLEM stones)
21 — Goblin fight, cudgels

22 — Ruby, stone key
23 — Bottle of water, red gem
24 — Levers
25 — Korianars grave, resilient sphere, unblemished sceptre
26 — Crystal ball
27 — Plants, green potion
28 — Lockpick
29 — Candle
30 — Orog
A — Locked door (lever at 8 opens)
B — Bragit

C — Serviceable silver cowl
D — Goblin encounter
E — Entrance
F — Magic fountain
G — Gullik
H — Hagbard
I — Jaacar
J — Ketchaval
K — Stone key 2
L — Oil flasks
M — Red key locks
N — Stone key locks
O — Silver sapling
P — Grand staircase (blocked)

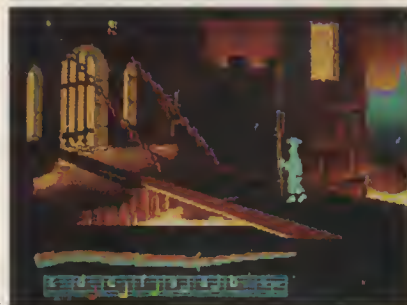
'Think often', think of ten.

The database password is creators.

Paul Ackerley, St. Helens

Loom for L. Furnival, Cheshire:

To get into the blacksmith's, you will need to go to Sandy (the little boy who is asleep) and cast the reflection spell on him to swap places with him. Go to the blacksmith's and the guard will let you in. Follow the path around until you come to the furnace. The blacksmith will take your wand and throw it on to the fire.



Stephen Cleaver, South Glamorgan

Ultima V for Kate Streatfield, York:

First and foremost, if you are stopped by any invisible walls, use Lord British's sceptre. Follow all instructions to the letter as Doom is very, very confusing.

On level two, use a gem to find the down ladder and go down to level three. Find the next down ladder and go down two levels to level five. On level five, find the ladder going up and return to level four. You should be in a cross-shaped room. Go to the centre of the room and take the ladder down. Once you're on level five, go east to where the paths cross, turn right and advance twice. Take



the ladder back up to level four, go east a few paces, find the portal and descend to level five. A ladder there will take you down to level six.

Once you bash up the monsters on level six, use a gem to find the ladder down to level seven. Don't take the ladder down to level eight. There is a small room to the south filled with monsters. In the centre of the room, there is a ladder leading down, take it to level eight. On level eight, you wind up in a room with a lot of very hungry beasts. Wipe them out, trigger the secret door in the northwest corner (preferably with magic axes, as you won't waste any ammunition). Mongbats will come out. Dispose of them, enter the secret passage and take the ladder back up to level seven. Once you beat the monsters, find the three triggers on the east wall that open another secret passage. Go north and then back down to level eight. Once here, go west and take the ladder back up to level seven. View a gem. In the middle of the C-shaped area

If you're lost in a labyrinth, stuck in a maze, perplexed by a puzzle or trapped by a cage. If you're pulling your hair out, right up to the roots, 'cos you can't find the key or the magical boots. If you're thinking of quitting and chucking it in, when no one can help you to play and to win. Then drop us a line at the usual address and someone will help you by doing their best to send us the answer to your troublesome plight, in return for which we will see them all right with a game of their choice (or a suitable other). Just send us your details in order to cover all possible alternatives and makes of PC. We even provide you with games on CD! (Was that twee or what?) (You're fired, Ed.)

should be a way back down to level eight (use it).

On level eight, you're on a tiny island in the middle of an equally tiny lake and (sigh) the island is packed with monsters. Fight your way to the north and look for a trigger. A secret passage will open in the northeast corner. Enter it and push on the walls at various locations. Another secret passage opens ... back to level seven.

Kill all the daemons, use the sceptre and move to the east, leaving the room and searching directly ahead of you. You should finally find a pit, which takes you down to find Lord British! (phew!)

Marcus Fong, London

Space Quest I for Chris Pettiifer and Hanna, Epsom

Downs:

Put your jetpack inside the trunk. You don't need it any more. As the robot comes, move the trunk towards the ventilator grill. I don't know how you open it (I think it's with the knife) but you must climb inside it.

Space Quest II for Tiny Sandhu, Middlesex:

Head back to the tree trunk in the fissure and climb into the log using a rope. You should find yourself in a cave with a monster. Sing out of his way.

Space Quest III for Nick Roach and Ben Hall,

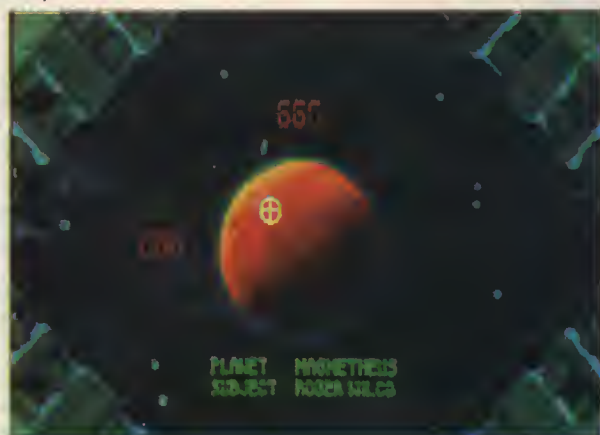
Buckinghamshire:

Sell the orium and buy the astro chicken hat, the orat on a stick and some underwear. Leave the shop and run from Arnold towards the pulsating pods. Lead Arnie into the pods and see him annihilated. You need his invisibility belt from his body.

Space Quest IV for Philip Trevett:

Go back to when you were first dressed as a 'babe' and collect the money and return to Sack's. Speak to the droid, you should get your own clothes back. Now buy the hint book, but not the Pocket-Pal adapter. Head to the arcade and have a go at Ms. Astro Chicken. Then touch the object on the far right hand end of the arcade, a time pod should appear, then run, fast, to the Skate-O-Rama.

Benjamin Diamant, London



Conquests Of Camelot for Brian Larsen, Denmark:

To get out of the desert, you must leave Al-Sirat's house and say no to Jabir: then go south into the desert. Go east, south and east again and you will come to a pool of water. Do not drink the water, otherwise you will die. Draw your sword to scare off Jabir, and go east past the skeleton. You will come to a Wadi. Go north and enter the building. Drink the water, then leave the pit and go north two screens. You are now at the walls of Jerusalem.

Daniel Robson, London

HARRIER JUMP JET

Flight Simulation
is about to take a new direction
Prepare for vertical take-off

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Coming Soon For IBM PC Compatibles

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Tel 0868 504 320

Part three of our
guide to Core
Design's Nordic
adventure takes
you through
islands 4, 5 and
5A



KEY FOR ISLAND 4

ST — Steps room
R — Ruin
V — Village
SP — Spear trap
AR — Arrow trap
SN — Snare trap
P — Pit trap
F — 1 unit of food
C1 — Treasure chest (untrapped), contains detect trap spell
C2 — Treasure chest (untrapped), contains an energy replenishment
C3 — Treasure chest (trapped), contains nothing
C4 — Treasure chest (untrapped), contains detect trap spell
T1 — Underground tunnel, emerges in village
T2 — Outside view through ditches



Steps room

Heimdall starts at point S and to continue he must step on one of the switches (1-4):
1 — Magic trap, lose some energy
2 — Arrow traps at A are activated
3 — Two invisible pits are located at B and C
4 — Two pits open beneath the treasure chests
C1* — Treasure chest (untrapped), contains an energy replenishment
C2* — Treasure chest (untrapped), contains detect traps spell

Ruin

M — Monsters to fight
A — Altar with a chalice on it
MO — Monk in a trance, levitating above ground. To release him from his trance you must drink from the chalice. If you do this he will awaken and give you a market pass card for later use.

Village

The local chief will give you a gold coin and ask you not to attack the village. If you do, you are cursed and lose energy for three days.
A — Village trading store. You may buy provisions here if you don't attack.

This section starts at G with the gatekeeper not letting you pass unless you have the gold coin from the previous island. If you don't, you will be attacked. In the hut (A) you find another scroll with a riddle. F is one unit of food. You then proceed into the maze area to be greeted by a signpost that points in two ways: The Way of the Warrior and The Way of the Druid. MD are two magic doors that close behind you and are unopenable. You



KEY FOR ISLAND 5

C1 — Treasure chest (untrapped), contains an energy replenishment
C2 — Treasure chest (trapped), contains a detect trap spell
C3 — Treasure chest (trapped), contains nothing
C4 — Treasure chest (untrapped), contains a levitation spell
P — A set of unpassable pits that can only be crossed using the levitation spell and only by the druid
GC — Gold coins
SN — Snare trap

then enter the market trading hut (MA). When inside, you will be asked for your pass (obtained from the grateful monk on the previous island). If you don't have it, you are kicked out. Here you can buy:
Replace energy (1 max)
Energy depletion (3 max)
Light spell (3 max)
Provisions (up to the ship's max)
Turn undead spell (1 max)
Invulnerability (1 max)
Golden key (for Island 7 — 1 max)

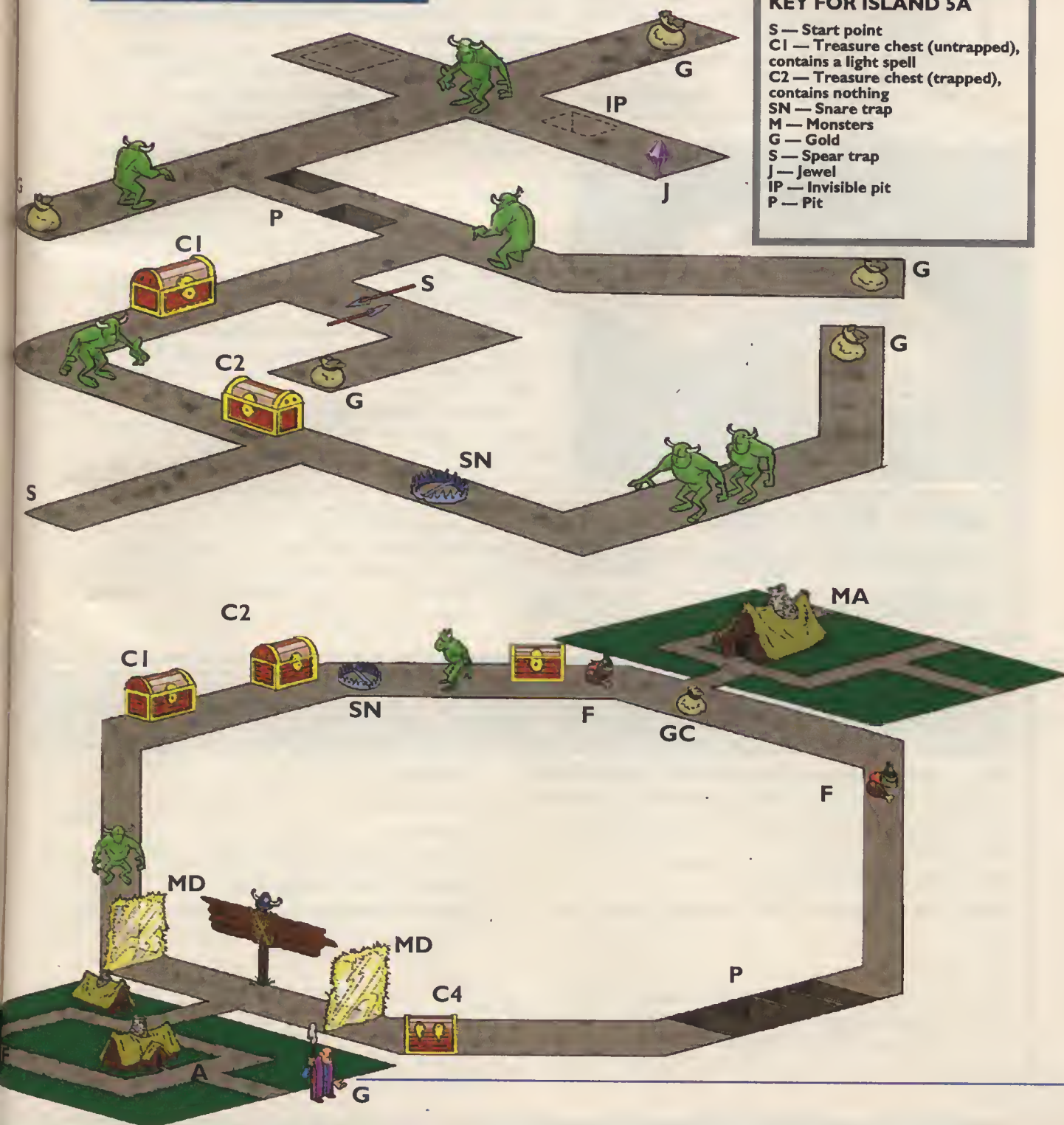


Island 5A
Small island
with marshy
passages on it.



KEY FOR ISLAND 5A

- S — Start point
- C1 — Treasure chest (untrapped),
contains a light spell
- C2 — Treasure chest (trapped),
contains nothing
- SN — Snare trap
- M — Monsters
- G — Gold
- S — Spear trap
- J — Jewel
- IP — Invisible pit
- P — Pit

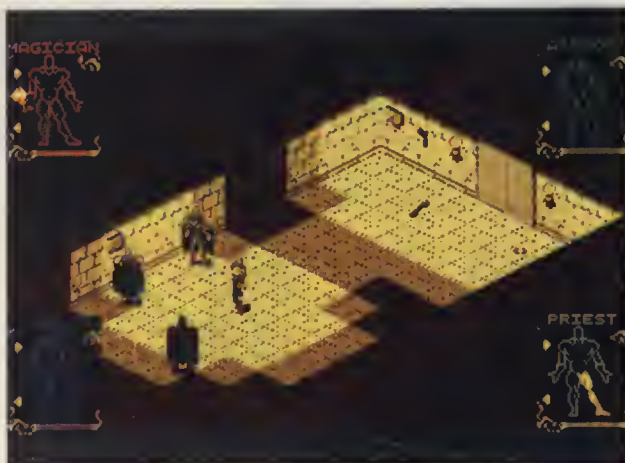


If you read our review of Shadowlands back in Issue 9, you'll know that it represents the first genuine attempt of a British company to break into the American dominated RPG market. This month we give you the opportunity to see just how good it really is by playing our interactive demo. Alternatively, try your hand at commanding a tank in Campaign ...

SHADOWLANDS

This interactive demo contains several rooms taken from the Egyptian level of the complete game. Exploring these will introduce you to the unique control and lighting systems used in Shadowlands. We think you'll agree that the game manages to generate a superb atmosphere.

You control four heroes, named, Warrior, Magician, Orc, and Priest. So how do you move these four heroes through our



exclusive playable demo? The controls may look complex at first but as with all good games, once you know what you're doing it's almost second nature.

Each character has his own portrait at the bottom of the screen, with five 'action areas': the two arms, the two legs and the head. Highlighting an area performs the following function:

| | |
|------------------|--|
| Right arm | Activate item (lever, torch, door etc.) |
| Left arm | Use currently carried object |
| Right leg | Walk to area |
| Left leg | Lead others to area |
| Head | Eat, drink, read object |

Clicking on a portrait with the left mouse button calls up the inventory screen which allows you to examine your possessions, rest, eat, drink or change your walking formations. Save and Load functions are disabled in this demo.

Objects can be passed between characters on the inventory screens, provided that the characters are close enough. If other characters are too far away their body icons will be replaced by faces.

If items you are holding have a Magik Force, this can be absorbed to top up your energy by clicking on the scales on the inventory screen.

To rest click on the eye icon on the inventory screens.

Likewise, to eat, click on the mouth icon.

F1 to F5 change the marching order of the party, and you can then edit the patterns by dragging the chess pieces to different places on the chess boards. By moving one or more of the chess pieces to the second board you can split the party in two.



How to load the programs

Those who are experienced PC users should check the quick installation guide below. If you're unsure how to proceed, read through the step by step instructions in this panel.

Quick installation guide

Put the PC Review cover disk into your floppy disk drive and log on to it. Type

FRONT [Enter]

to start the menu and follow the on-screen prompts.

When the program(s) have installed, log on to the relevant directory, and type the following to start the programs.

Shadowlands

SHADOW[Enter]

Campaign

CAMPAIGN

PocketD

Please read the instructions above.

Step by step instructions

Put your PC Review cover disk into your floppy disk drive.

Log on to that drive by typing

A: [Enter]

if your floppy drive is drive b:, substitute b: for a: in the example above, eg, B: [Enter] to log on to drive B.

Type the following:

FRONT [Enter]

POCKETD

PocketD is a small flexible colour directory listing program and exceptionally powerful DOS utility. Its highly generalised design and range of built-in features allows it to be used for almost any purpose, including for example: virus checking, disk cataloging, disk backup reminder, reversing unintended copies, DOS menu system, programmer's 'make' system and much, much more ...

PocketD is the one program most likely to fulfil all your file management needs and probably the nearest you will get to the DOS user's equivalent of the Swiss Army knife.

It's 25K in size and supports over 120 options, including the following key features (these are expanded and detailed in the file Feature.cmp):

- Full on-line help giving direct access to help on each option;
- Optimised file copying to multiple disks;
- Safe file/dir copy/move/rename selected by any criteria;
- Fast move by copying directory entry, rather than copy plus delete;
- Search for files across multiple drives and subdirs;
- Search or view contents of zip, zoo, lzh, arc, pak, pka & arj archives;
- Advanced wildcard system, allowing multiple filespecs such as `"*TMP*F"` or `"*=D*"` (match any name containing a digit 0-9), etc;
- Highly programmable execution and display template(s), providing a

viable alternative to a command-line programming language, allowing the creation of powerful interactive utilities and the emulation of programs such as Which, Ncd & Make;

- Detection of, and testing for, Pklite, Diet and Lzexe compression;
- Touch and full Attrib for modifying file and dir dates/attributes;
- On-line Browse of file lists for viewing, deletion, running etc;
- A user-defined colour menu system for use in BAT files;
- Analysis of environment variables (eg, path lib, include, etc.);
- String search in binary or text files for presence or absence of literal or 'typed' strings (eg, alphabetic, non-numeric, etc.);
- Automatic best-fit directory listing format option;
- Recursed summary of subdirectory contents within directory listing;
- Bar-chart display of relative file/subdir sizes;
- Display of execution size of programs;
- Sort by six keys (eg, type, size, date) and by row or column;
- Full colour options, allowing assignment for specified filespecs;
- Automatic support for 80x43, 132x60 and any other screen sizes;
- 37 user-defined parameters.

PocketD is good for both the occasional and the advanced user. It

provides the usual day-to-day file operations, such as file copying, in a safe and easy-to-use format. It also bends over backwards to accommodate each user's particular tastes by offering vast numbers of tailoring options.

Type

DEMO

for a tutorial and demonstration of PocketD.

For more detailed information type

TYPE README.D | MORE

or type

COPY README.D PRN

to get a printed copy of the documentation.

HELPLINE

If you still have problems then please phone our helpline number below before returning your disks:

DISK HELPLINE: (0443) 693233

The helpline operates between 10.30 am and 12.30 pm weekdays. If possible, please have your computer operating and your cover disk ready when you phone the helpline. If your phone is not near the computer then please note down as much information about the fault as you can and have pen and paper handy before you call.

to start the cover disk menu program.

Use either a mouse or the cursor keys to select the program you wish to install. With a mouse, click on the bullet next to the appropriate program. With cursor keys, move the pointer to the bullet and press Enter.

Taking Shadowlands as an example, you should now see an on-screen message saying

The program will be decompacted to C:\SHADOW Is this OK? (Y/N)

If this is OK, ie, you want to install Shadowlands to your hard disk C:, and you have no other directories called SHADOW, press Y and then Enter.

If you are installing to another disk, or you wish to give the directory a different name, simply press N [Enter], backspace over C:\SHADOW and retype your preferred destination, eg,

B:\RPG [Enter]

The program should automatically install, finishing with the words All

done!

To play the cover programs, log on to the correct drive and directory (if you did change the drive and directory names, don't forget where you put them!):

C: [Enter]

CD SHADOW [Enter]

will take you to the SHADOW directory on drive C:

Type these commands to start the programs.

Shadowlands

SHADOW [Enter]

Campaign

CAMPAIGN [Enter]

PocketD

Please read the instructions above.

Ever fancied the idea of commanding your own tank platoon? Now you can recreate the tank battles of World War II in Campaign, a 3D action/strategy game from Empire. Our playable demo gives you the opportunity to fight a single battle from the game.

Your objective is simply to destroy all of the enemy vehicles in the area, before your own force is wiped out.

When you start the demo you begin with the map screen. Here you can see the locations of all your vehicles and all the enemy vehicles. Your tanks are represented by yellow symbols, the enemy tanks by red symbols, and the tank that you are currently controlling by a light blue symbol.

If you click with the left mouse button anywhere on the map your control will switch to the nearest friendly tank. The tank you are controlling is shown in 3D to the right of the map. Beneath this a flag shows the nationality of the tank.

Keep an eye on the face icon next to the flag; this is a rough indication of how damaged the vehicle is; the sadder the face looks, the more damage the vehicle has sustained. Beneath this, two more icons show how much fuel and ammo the vehicle has. The final icon at the bottom of this panel is used to give commands to the tank. These are stop, go and dig-in, and are indicated by self-explanatory symbols.

You can obtain information on enemy tanks by just clicking directly on their symbols on the map. The icon at the top-left of the panel, showing a greyed-

CAMPAIGN

out skull and crossbones is for editing minefields and is not applicable to this demo version. Next to this is a speaker icon which, when clicked, will toggle sounds on and off. The third icon at the top of the panel is used to pause the game.

The running man icon is used to command your platoon to retreat to the baseline of the battlefield.

Beneath this is a compass showing the orientation of the battlefield in relation to the campaign map.

The two large icons to the right are for controlling air strikes and indirect fire and are not applicable to this demo version.

You can alter many game parameters by clicking on the text page icon, including the keys that control the game. Clicking on the remaining icon on this screen will take you to the 3D view.

In the 3D view the tank status icons function in the same way as they do in the map view. Beneath these is a radar scope showing the activity surrounding your tank, which is represented as a light blue dot in the centre of the scope. Red dots are enemy tanks and green dots are friendly tanks. Any dots that are not flashing are the remains of destroyed vehicles, and these disappear after a short while. The green line shows your heading relative to the battle map.

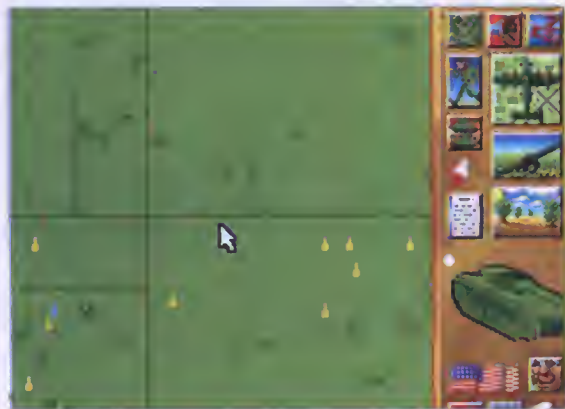
On the other side of the panel are pause and sounds icons which function in the same way as those on the map screen. To the left of these is an icon to take you back to the map screen, and below this is the shell icon. This is dimmed whenever the gun is being reloaded. You can only fire while this is at full brightness.

The large central panel at the top of the screen displays incoming messages and game reports.

HOW TO CONTROL YOUR TANK

The 3D view is normally locked to your turret, so whichever way your turret is facing is the way you will be looking. You can, if you wish, lock the 3D view to your hull, so that you are always looking in the direction in which you are heading. Toggle between the two modes with the F1 key.

| | |
|----------------------------|---|
| Left track forward | H |
| Right track forward | K |
| Left track backward | N |
| Right track backward | M |
| Turn turret anti-clockwise | G |
| Turn turret clockwise | L |
| Elevate gun barrel | F |
| Depress gun barrel | ; |



PC Review's cover disks are checked at each stage of production for all known viruses and duplicated under strict quality control. However, we can accept no responsibility for damage to either data or hardware caused by use of our cover disks.

We make every effort to ensure that cover disks contents are as advertised. If circumstances should dictate that we are unable to supply the stated programs, we will endeavour to provide alternative software. However, PC Review, its distributors and retailers will not be held responsible for any unnotified change to the contents of the disk.

| | | | | | | | | |
|-----------|----------|---|--------|---|--------|---|-------|---|
| TECH SPEC | CGA | ✗ | EGA | ✓ | VGA | ✓ | Tandy | ✓ |
| | Hercules | ✗ | Roland | ✓ | Ad Lib | ✓ | | |
| | HD | ✗ | | ✗ | | ✓ | | ✓ |
| | | | | | | | | |

Gallery

(3.5" disks only)

The PC Review Gallery is back. This month we've included a couple of screens from two hot forthcoming releases.

Wizardry VII: Crusaders of the Dark Savant is the latest game in Sir-Tech's role-playing series. Like its predecessor, this game will be distributed in the UK by US Gold. It boasts some of the finest 3D graphics seen in an RPG of this type to date.

Ragnarok is the next PC game to be released by Mirage, the company responsible for the Giger adventure Darkseed. Ragnarok is based on the battle of the same name in Norse mythology. It is a board based strategy game with attractive 3D animated pieces. Both of these games are due for release this autumn.

You can view the screens from these games by logging onto the disk and directory on which Gallery is installed and typing

SHOW

to start the program.

For example, if you installed Gallery in the directory C:\SHOW, you would type

C:
CD \SHOW
SHOW

To view a picture, click with mouse on the relevant bullet, or use the cursor keys to highlight the picture you want to view and then press Enter.

When you have finished viewing the picture, press a key or a mouse button to view the accompanying text, then press another to return to the menu.

TROUBLESHOOTING

If you're having problems, check our trouble-shooting guide below:

I get the message 'Cannot run in Mono'.

- The menu program will not run on mono machines. If there are mono compatible programs on the disk, you will have to install them manually as outlined on page 17.

When I try to start the menu program I get no response or the message 'Bad Command'.

- Have you made the drive containing the cover disk the current one?
- Is the disk properly inserted with the drive door closed?

I have correctly installed the program, but it won't work.

- Have you followed the

correct loading procedure?

- Have you made the correct directory and drive the current one?
- If the game was installed to floppy, is the correct disk properly inserted and the drive door closed?

The program I have selected won't install properly.

- Is there a blank, formatted disk in the drive you have selected, and is the drive door closed?
- Is there enough room on the disk you have selected. You should only install programs to blank disks (one for each program you install). If installing to a hard drive, as a general rule, you should have at least two megabytes of free space for each month's cover disk. Sometimes the programs will not fit on to a 360K disk, even if it is completely blank.

NEXT MONTH

From next month, we will be using a new and improved cover disk menu system that will make the process of installing the programs on our disks even easier.

The new front-end will be compatible with all machines, running DOS 3.0 or later, including those with mono graphics adaptors or displays.

It will also help you to install programs by automatically checking the validity of the directories you wish to install to, and the amount of space left on disks you are installing programs to. And, you won't have to restart the program for each item you install.

And because our new system is smaller we'll be able to pack even more goodies onto each disk. So whatever you do, don't miss next month's PC Review!

FAULTY DISK?

PC Review's cover disks are checked and validated, but if you have reason to believe yours is faulty, pop the disk(s) in a jiffy bag with an self-addressed envelope and postage to the value of 28p (55p from overseas) for return of the new disk, and the form below (filled in) and send the package to the following address:

PC Wise
Unit 3, Merthyr Industrial Estate
Pentrebach
Merthyr Tydfil
Mid Glamorgan
CF48 4DR

Please DO NOT send the disk back to PC Review – we don't hold stocks of spare disks.

Name.....

Address.....

The disk on my copy of PC Review was damaged. Please send me a replacement – I enclose return postage to the value of 28p (55p from overseas) and the original disk.

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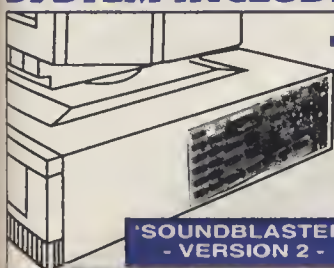
WITH LATEST
VERSION 2 OF

SOUNDBLASTER

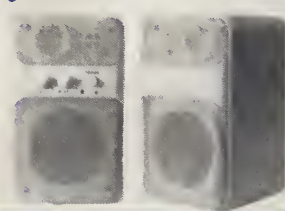
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ANALOG EDGE Joystick by Suncom Technologies



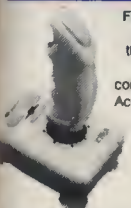
Suncom's analogue joysticks always set new standards in quality and performance. The Edge represents terrific value, incorporating *Injected Resistor Technology*, resulting in a product with unmatched simplicity and breakdown resistance. Features two-way switchable fire buttons, and Aircraft-style grip, with game optimised ergonomics. Complete with 'Gameport 2' dual input gameboard halfcard.

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INCLUDING CONTROLLER CARD

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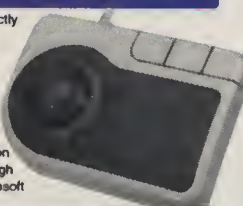
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TRACKBALL

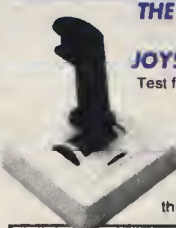
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NEW! FLIGHTSTICK



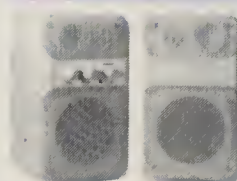
THE NEW FLIGHTSTICK HAS TO BE THE ULTIMATE, TOP QUALITY JOYSTICK FOR COMPUTER PILOTS!

Test fly a Flightstick with your favourite simulator and you will know the meaning of *control*. Whether you're a novice or experienced combat pilot, flying skills will be improved and energy kill rate will increase. Excellent construction - looks and feels like the real thing! Includes throttle control and 7ft long connection cable.

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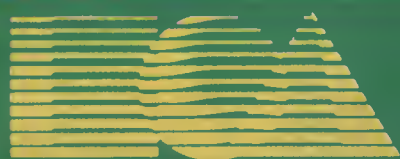
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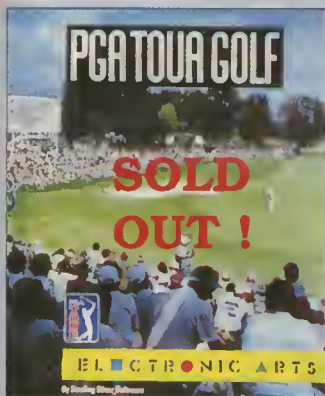
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Out of the darkness were born two nations, fanatical followers of their own beliefs, warriors by nature. Ultimately there can only be one survivor to claim victory over all! Design your own worlds and conquer them! Control the awesome power of nature and experience this classic, biggest selling 16 bit title ever!



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PGA Tour Golf is the only computer game ever licensed by the US PGA. Panoramic fly-by shots and look-back view let you play real tournaments on real courses. Instant replay lets you relive great shots as you compete against 60 PGA pros!

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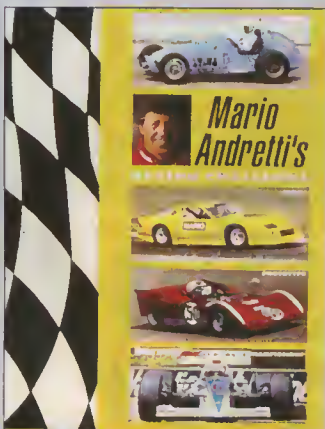
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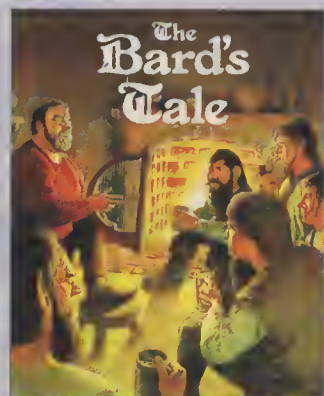
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|-----------------------------------|-------------------------------|--------------------------------|--------------------|
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| Battle Chess | <input type="checkbox"/> 3.5" | <input type="checkbox"/> 5.25" | source code: 0016D |
| Battle Chess (Windows) | <input type="checkbox"/> 3.5" | <input type="checkbox"/> 5.25" | source code: 0017H |
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Win! A Star colour printer



First prize 24-pin Star colour printer

Second prize 9-pin Star colour printer

Ever sat there looking sadly at your latest DPaint II masterpiece and wishing that you could have a copy of it in colour? Well, that will soon be possible for the lucky winner of our competition run with Star

Micronics UK. Star Micronics was founded in Japan in 1947 and is now one of the most renowned printer manufacturers in the world. Star Micronics UK alone produces over 60,000 printers a month for the UK and Europe.

These range from low-cost, high technology dot matrix models to top of the range ink jet and laser printers. All Star printers are characterised by a high degree of user-friendliness. You won't have to fiddle with confusing dip

u have large volume
 printing at speed
 Quality mode. Ther
 Any one of its 10
 Orange, Or

A

en you have large v
 speeds of up to 180
 also a high speed dr
 ter Quality fonts ca

B

ip Switches, whi
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 onfigured, very
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C

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 Dip Switches, which
 : changed, very quick

D

to worry about mat
 onary printer incor
 l by the standard pa
 ll leading systems.

E

switches for one thing; the printers
 can be fully configured from an
 easy to use front panel. When you
 take into account features like
 automatic paper parking and eight
 or more resident fonts, it is easy
 to see why these are currently the
 most popular printers available.

The Star LC24-200, worth £410,
 will churn out copy at a speedy
 200 characters per second in draft
 elite mode, and still maintains a
 swift 67 characters per second in
 letter quality mode. The 10 built-
 in fonts, which include Times
 Roman, Script and Sans Serif can
 be printed in black, violet, orange,

green, blue or pink, and with a
 variety of effects ranging from
 underlined to outline.

The runners-up prize is the LC-
 200 9-pin colour printer, worth
 over £300, which zips along at 180
 characters per second in draft
 elite mode and 45 characters per
 second in Near Letter Quality
 mode. Once again the printer has
 a range of easy to use options and
 is simple to set up.

Both models can be fitted with
 an optional sheet feeder, but
 come supplied with swivel
 selectable push or pull tractor
 feeds.

HOW TO ENTER

In the boxes to the left, we have
 reproduced a selection of sample
 print from the two printers on
 offer. All you have to do is match
 each sample up with one of the
 styles listed below:

1. 9-pin draft mode
2. 24-pin draft mode
3. Script
4. Times Roman
5. Sans Serif

For example, if you think that
 sample A is Script, then write
 Script after A on the entry form or
 your postcard. Send your answers
 to the address below.

When you wish
 upon a Star ...
 PC Review
 EMAP Images
 Priory Court
 30-32 Farringdon Lane
 London
 EC1R 3AU

and make sure it reaches us by
 October 17th 1992. We'll annouce
 the results in our November 1992
 issue.

If you wish to enter both
 competitions in this issue, you
 may enclose both entry forms in a
 single envelope marked
 September Competitions.

Rules

The winner of the Star LC24-200
 colour printer will be the first
 correct entry drawn at random
 after the closing date.

The winner of the Star LC-200
 colour printer will be the second
 entry drawn at random after the
 closing date.

No entries received after the
 closing date will be considered.
 Only ONE entry per person, please.
 Multiple entries will be
 disqualified.

Employees, and their relatives or
 associates, of Star Micronics UK
 Ltd and EMAP Images are not
 eligible to enter this competition.
 The editor's decision in all these
 matters is unequivocally final.

When You Wish Upon a Star
 I think the samples are:

A:
 B:
 C:
 D:
 E:

NAME:.....
 ADDRESS:.....
 AGE:.....
 OCCUPATION:.....

☐ Tick this box if you do NOT wish to receive
 any further information from companies
 associated with this competition.

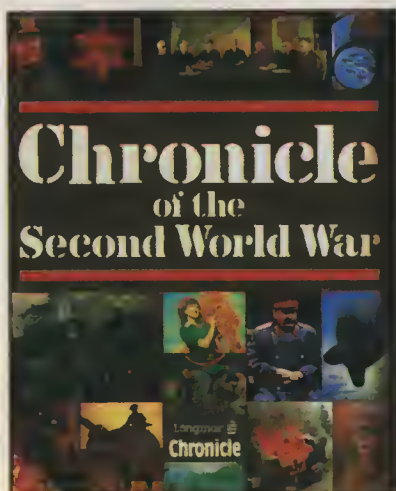
Closing Date: October 17th 1992

WIN

To mark the launch of the game Campaign Empire Software is offering PC Review readers to chance to win the complete World at War series on video. The World at War was produced by Thames Television, and shown for the first time in 1974. Since then, it won numerous awards and has been acclaimed as the definitive television history of the Second World War.

We have two complete video sets, each comprising ten video cassettes to span the full 26 episodes, to give away to two first prize winners. The World at War video series is available from all good video outlets and normally costs £19.99 per box set of two videos (thus £99.95 for the full set of ten).

Runners-up



The next five entrants to come out of the PC Review helmet will win a copy of Longman's Chronicle of the Second World War (worth £29.95 normally). This details and explains the events of World War II in the distinctive style of Chronicle of the Twentieth Century, using contemporary newspaper reports and photographs.

World at War

1. The War of Jenkins' Ear was between.....

2. The Opium War took place in.....

3. The Battle of the Bulge took place in.....

4. The Hundred Years' War lasted foryears

Name.....

Address.....

THE WORLD AT WAR VIDEOS

And there's more ...

For 20 more winners after that, there are copies of Campaign, the game, published by Empire Software, a preview of which is featured on this month's cover disk.



How to enter

In order to give yourself a chance of getting your mitts on one of these superb prizes, all you need to do is to answer the questions below (Question 4, incidentally, isn't a mistake, and isn't really a trick question either) correctly. Fill in the form,

stick it on the back of a sealed envelope or postcard and post it off to
The World at War competition
PC Review
EMAP Images
Priory Court
30-32 Farringdon Lane
London EC1R 3AU
 and make sure it reaches us by September 17, 1992. We'll announce the results in our November 1992 issue.

Questions

1. Between which nations was the War of Jenkins' Ear (1739)?
2. Where did the Opium War (1839-42) take place?
3. Where did the Battle of the Bulge (1944-45) take place?
4. How long did the Hundred Years' War last?

Rules

The winners of the World at War videos will be the first two correct entries drawn at random after the closing date. The next five correct entries will each win a copy of the Chronicle of the Second World War. The next 20 correct entries will each win a copy of Campaign. No entries received after the closing date will be considered.
 Only ONE entry per person, please.
 No employees, or their relatives, or associates of Thames Television, Longman, Entertainment International or EMAP Images are eligible to enter the competition.
 The editor's decision in all these matters is unequivocally final.

☐ Tick this box if you do NOT wish to receive any further information from companies associated with this competition.

Closing date: September 17, 1992

PC Review September 1992

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 - Epson and IBM Emulation
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SILICA PRICE: £269
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 - Epson and IBM Emulation
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- RRP** £299
COLOUR KIT £38
SILICA STARTER KIT £25
TOTAL VALUE: £362
SAVING: £163
SILICA PRICE: £199
- +VAT= £283.83 ref. PRI 2484



- FREE COLOUR KIT**
- 192 CPS** **136 COLUMN**
- Citizen Swift 24x - 24 pin - 136 column
 - 192cps Draft, 64cps NLQ
 - 8K Printer Buffer + 4 Fonts
 - Parallel Interface
 - Graphics Resolution: 360 x 360dpi
 - Epson, IBM and NEC P6 Emulation
 - Colour Option Available
 - **FREE Silica Printer Starter Kit**
- RRP** £489
SILICA STARTER KIT £25
TOTAL VALUE: £514
SAVING: £165
SILICA PRICE: £349
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INKJET PRINTER



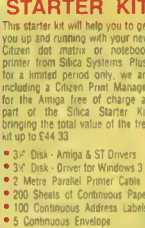
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 - HP Deskjet plus emulation
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TOTAL VALUE: £499
SAVING: £137
SILICA PRICE: £359
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Which computers, if any, do you own? 55G



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PC Review

From next month, you'll find a suave, smart and sophisticated PC Review on your newsagent's shelves:

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- * **(MORE EXPENSIVE...** PC Review's 3.5 inch edition is going up to £3.95; the 5.25 inch edition to £3.50)

Next Month

Playable preview of
POPULOUS II
on disk



The 30 best RPGs

A comprehensive guide to role-playing games: the terms explained, the games evaluated.

Music

Rob Beattie concludes his beginner's guide to music-making on the PC.

Simulation School

Need to brush up on your flying, or driving skills? Enrol with our new series and find out how to get the very best out of computer simulations. Next month: flight sims and basic dogfighting.

Competitions

Win the Creative Multimedia Upgrade Kit plus special Lord of the Rings 2 competition

Reviews

A-Train: Sim City with trains? PGA Golf for Windows, Laura Bow 2 and much much more.

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Progress report on the animation program Playmation

Perfect printers for your PC

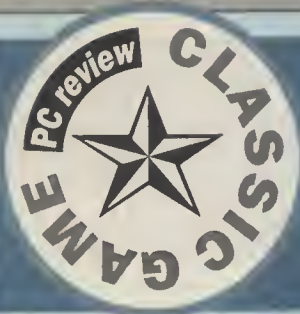
All the latest news and your queries answered.

Contents may be subject to change

September 17

PC Review Issue 12 goes on sale

Place an order with your newsagent today



CLASSIC GAME GUIDE

Classic action, classic thrills, classic games – brought to you exclusively in PC Review's new Classic Games Guide!

This month's Classic Games Guide has been updated to take account of some of the best games to be released more recently, and price and label changes for the older games. You'll see that some titles have "now delisted" written against the price. This means that the publisher in question is no longer (or not at the moment) producing copies of the game,

but you may still be able to obtain it in shops or through mail order suppliers. This is particularly true of titles published under the Cinemaware, Image Works or Mirror Image label, which is in a state of limbo at the moment following the demise of the Maxwell-owned publisher. Temporarily, we hope.

Over the past few years there has been a massive increase in the number of software houses developing games for the PC in this country *and* the amount of

products coming from the United States. The choice facing the buyer is truly impressive.

Each month we will feature top quality PC games, covering all aspects of computer entertainment, from action to brain teasers, fantasy to sport, and flight simulations to strategy. And each month we will also take an in-depth look at a particular classic game.

This section of the magazine is not just a nostalgia trip, however. Classic games are being created all the time and they too will find a place here. So if you are a keen gamer or newcomer to the excitement of computer entertainment, there will always be something new for you to read each month.

The accompanying Dealer Directory lists nearly 40 of the country's top independent computer shops and, in conjunction with Centresoft, one of the UK's leading distributors of software, they have agreed to feature the games listed in this guide.

When you visit, look out for the PC Review Recommended logo – the guarantee of quality games and quality service.

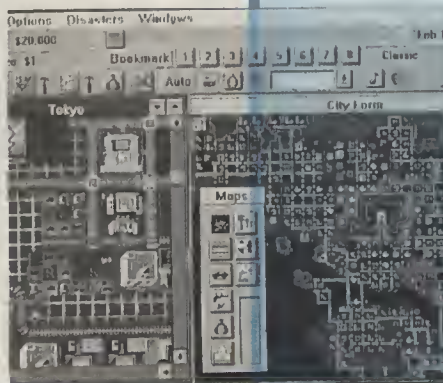
The action starts now ...

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CLASSIC GAME OF THE MONTH

SIM CITY



We have done everything humanly possible to check the information in this guide. But prices do change, distribution switches from one company to

another, even brand names can alter. While we will update the information regularly to take account of this, we cannot be held responsible for errors.

Anyone – suppliers, publishers or readers – who knows of any products suitable for inclusion, but which have been mysteriously omitted, can write in

with details – please do not telephone – to PC Review, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

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CLASSIC GAME OF THE MONTH

Sim City

How do you categorise it? Is it a game? Is it a social simulation? Is it nothing more than an amusement without real objectives? Those were some of the questions which were inadequately answered by reviewers of Sim City when it was first released. The truth is that Maxis' city simulation won't be forced neatly into any category; in its day it was highly original, although it has now begun to attract several imitators, Gremlin's Utopia for the PC being an impending example.

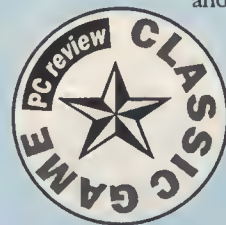
As you might guess from the title, Sim City is all about city planning. You begin with a bird's eye view of an area of unpopulated land and upon it you place all the elements that go to make up a city, including residential areas, commercial areas, industrial areas, recreational areas and sources of power.

Every action costs you money, of which you have a limited but regenerating fund (the speed of accumulation depends on tax rates and population growth). Actions like clearing a small area of land for building are the cheapest, while erecting nuclear power stations is prohibitively expensive. Especially in the initial stages, unless you carefully plan your young city, you may find yourself running out of money, which is being regenerated too slowly.

City building isn't just a case of plonking down elements wherever you like, everything has to be neatly balanced. Have you enough power sources to generate the required power for residential, commercial and industrial areas? Are there enough public services like police and fire brigades? Is your road network efficient enough?

One of the most difficult aspects is keeping the populace happy. While they need places to work, they prefer to forget all about that when they go home, so if you sandwich a residential area between a power station and an industrial area you're not going to find many people moving in. Stick it next to a recreational area with good road and rail links to places of work, and you'll find it's a lot more popular.

Regular Sim City players have evolved all sorts of strategies for getting their cities working more efficiently, from the modern American grid system through to sprawling open plan city scapes. There are a couple of good books available from most computer stockists and bookshops which share some of those planning secrets.



If you get bored with creating a city from scratch, you can always

try managing one of the pre-planned cities supplied on disk. Running these becomes more interesting when you introduce disasters ranging from earthquakes to the Godzilla style Japanese monster.

If you're still hungry for more, then you need look no further than the host of Sim City add-ons that Maxis has released. These range from new graphics sets like Ancient Cities and the Wild West, to the Construction Set, which gives you the opportunity to create your own scenarios.

That Sim City still has a huge cult following a couple of years after its release is testimony to the game's strengths. It doesn't look like ending either. It has already given rise to two further simulations: Sim Earth and Sim Ant, with another, A-Train, expected later this year. Sim City itself has also been given a new lease of life in an updated version written especially for Windows.



■ **Sim City**
■ **Maxis** ■ **£29.99**

ACTION

GOLDEN AXE **Tronix, £9.99**

An unusually successful conversion (in PC terms) of a traditional hack and slash coin-op – Golden Axe offers a choice of male and female heroes, but it's still all just straightforward macho bloodletting really.

PRINCE OF PERSIA **Domark, £30.64**

The amazing animated characters are only eclipsed by the depth of the play. An extremely durable game, number four in our Readers' Top 50, and a genuine contender for the greatest action game ever.

IVAN IRON MAN STEWART'S SUPER OFF-ROAD RACER **Tronix, £9.99**

It's high-speed, four-wheel-driven action all the way in yet another successful Virgin coin-op conversion. More multi-player fun than you can shake a gearstick at.

SPEEDBALL

Mirror Image, £9.99 (now delisted)

Hectic and brutal futuristic sporting action from the Bitmap Brothers, with pinball, basketball and martial arts rolled into one great sucker punch. Only surpassed by ...

MUDS **Rainbow Arts, £24.99**

A peculiar 'future sport', where two teams of astonishingly ugly monsters try to throw an SFA (Small Furry Animal) into a basket. A strong blend of sick humour, action and strategy. Highly entertaining in a strange sort of way.

VIRUS

Mirror Image, £9.99 (now delisted)

A still-stunning 3D shoot 'em up (despite its advancing years), which rewards the time spent in mastering the controls with exhilarating and satisfying action.

RICK DANGEROUS 2 **Klxx, £9.99**

As is this laugh-a-minute sequel, where the pint-sized hero once again has to negotiate his way through level after level of less than serious opposition. Pure

platform-based arcade adventure over four levels packed with complex and testing puzzles. A hilarious masterpiece.

SPEEDBALL 2

(available on Bitmap Brothers' Vol 1 compilation at £30.99)

You guessed it! A worthy sequel to the impressive original, featuring a larger play area, new rules, harder and faster action and a whole new management structure. The updated pitch allows for more violent plays. It appeals to sports fans as well as play tacticians.

XENON 2

Mirror Image, £9.99 (now delisted)

Still the ultimate in straightforward shoot 'em ups, (above) featuring almost unlimited ship upgrades and a real difficulty curve. The

INTERPHASE

Mirror image, £9.99 (now delisted)

A graphically impressive 'cyberpunk' 3D action adventure set inside a 'Big Brother' computer. Unusual and playable in equal parts.



SIMULATION (FLIGHT)

CHUCK YEAGER'S AIR COMBAT

Electronic Arts, £34.99

Electronic Arts makes a real bid for MicroProse's 'king of the sim' title with this multi-plane flight and fight extravaganza, played out above three wars and scenarios and named after the first man to fly faster than the speed of sound.

F-29 RETALIATOR **Ocean, £34.99**

An impressive, if slightly simplistic, simulation debut from the movie tie-in specialist. Good speed, multiple missions and a choice of two experimental craft make this a good choice for those who value instant action over accuracy. It also includes an option to play head-to-head with

another human player via a modem. With the possible exception of Jetfighter, this has the easiest controls on any flight simulator. It's pure fun from the moment you take off.

F117A STEALTH FIGHTER

MicroProse, £39.99

Nothing less than the state of the art in both subject matter and programming technology, F117A features multiple radar-invisible missions over five theatres of war. Seeing is believing – an absolute must for serious flight fans. Apparently this simulation caused quite a stir in military circles when it came out because of its accuracy. There are plenty of theatres of war in which to fly the craft, including Central Europe, the Middle East, Libya, Korea and

Northern Cape, which vary in complexity and difficulty.

FALCON 3.0

Spectrum HoloByte, £49.99

Reviewed in PC Review Issue 4, Falcon 3.0 offers a strong action-based complement to MicroProse's F117A (see above). Beautifully presented, this simulation features head-to-head combat at the controls of the USAF's pride and joy, the F-16 Fighting Falcon. As good as they come. **Rated 9**

GUNSHIP 2000

MicroProse, £39.99

A nice break from the usual fixed-wing action, Gunship 2000 is a strong progression from MicroProse's original (and highly popular) chopper simulation, with a strong

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SIMULATION (FLIGHT)

storyline built in. Highly recommended.

FLIGHT SIMULATOR v4.0

Microsoft, £45.00
An all-out 'simulator' as opposed to a 'simulation', version four offers precious little combat, but does offer the most realistic recreation of real flight that's possible to get from any home computer. The big Daddy of PC flight sims and a real learning experience.

KNIGHTS OF THE SKY

MicroProse, £40.86
Chocks away for a historical joyride over the trenches of World War I in France. What it inevitably lacks in speed, Knights of the Sky makes up for with tense and gripping dogfight action. A nice break from the usual array of F-birds.

LHX ATTACK CHOPPER

Electronic Arts, £39.99
Although it's now been superseded by MicroProse's Gunship 2000, LHX Attack Chopper still offers a mix of strong action, unusual gameplay (with unusual experimental aircraft) and a structure which works well enough for experts and amateurs alike. Control is simple yet comprehensive. It contains a wealth of gameplay options and three scenarios – set in Libya, Vietnam and Europe.

MiG-29 SUPER FULCRUM

Domark, £44.99
The sudden and unexpected end to the cold war allowed Western developers, game designers and programmers to check out and recreate a number of Soviet aircraft, the best result of which was this game, reviewed in Issue 2. In keeping with these changes, the aim of this game is to maintain the new world order. As a member of a UN peace-keeping force you are sent to free an unnamed area of South America which has come under rebel domination. Your goal is to knock out their headquarters. No easy task as the rebels themselves possess an impressive array of weaponry. Aircraft buffs will

undoubtedly enjoy flying this less technology-heavy plane.
Rated 7

RED BARON

Dynamix, £39.99
It really needs a powerful PC to operate to its optimum ability, but once this is taken care of this is one of the most accurate and option-heavy simulations available. The most highly rated flight sim in our Readers' Top 50.

JETFIGHTER II

Velocity, £39.99
Concentrating on easily-accessible 'arcade-style' action rather than 'true'; simulation, Jetfighter II offers four aircraft, multiple enemies and 100 missions. Neat, polished, accessible and lavishly presented.

SECRET WEAPONS OF THE LUFTWAFFE

Lucasfilm, £40.99
Lucasfilm is a company which specialises in producing top-notch games in two distinct areas: animated graphic adventures (The Secret Of Monkey Island etc.) and historical flight sims, the best of which is this beauty, first reviewed in Issue 1. The premise of the game is what if the jet and rocket-powered weapons the Germans were working on in the dying days of the war came into general use and their effect on the outcome of the war. Extra missions disks are now available.
Rated 6



SIMULATION (DRIVING)

4D SPORTS DRIVING Mindscape, £30.99

A hybrid of Domark's Hard Drivin' and Accolade's Test Drive games (more later), developer DSI's 3D racer is a one-on-one against an equally well equipped opponent. As an added bonus, comes complete with a course designer.

BILL ELLIOT'S NASCAR CHALLENGE

Konami, £35.99
The trouble with North American Sports Car racing is that it all takes place on a circular course, which limits the game's variety. That aside, this is a good rendition of one

of the fastest four-wheel activities there is. The game includes a host of options. You can choose cars, tracks, type of race – qualifying, apprentice or main event.

INDIANAPOLIS 500

Electronic Arts, £29.99
Among the greatest simulations of any type available for the PC. You race against 32 other drivers in your bid for glory as the simulation takes you from initial practice, warm-up laps, qualifying heats and the big race itself.

Gasp in amazement at the realism ... then do it all over again using one of the spectacular replay options. Unsurpassed.

HARD DRIVIN' 2 – DRIVE HARDER Domark, £30.64

Not so much a sequel, as a second attempt at converting a difficult coin-op, with both conventional and stunt courses – and a good thing too as this is far better than the original. Much more playable and now a real challenge.

MARIO ANDRETTI'S RACING CHALLENGE

Electronic Arts, £29.99
Putting you at the wheel of everything from an F1 thunderbolt to a dirt-track buggy, MARC is as much fun as it is well executed. Only for users with faster processors though.

TEAM SUZUKI

Gremlin, £29.99

You get the chance to ride three classes of motobikes, a 125cc with six speed automatic gearbox, and 250cc and 500 cc bikes both with six speed manual

gearboxes. The game features a TV camera option so you can see yourself race. Team Suzuki is difficult to master but well worth the trouble – especially for bike fans. Reviewed in Issue 1. Rated 7



TEST DRIVE III - THE PASSION

Accolade, £30.64

The 'passion' in the title presumably refers to the way that owners feel about the luxury cars featured here including a top of the range Lambourghini.

Apart from that, it's a standard 3D driving sim with a few nice bells and whistles thrown in for good measure. Last of a series featuring gorgeous cars and various courses to drive them on.

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SIMULATION (OTHER)

SILENT SERVICE 2

MicroProse, £35.75

Historically and technically accurate (right down to the profusion of unreliable torpedoes), SS2 takes some mastering but it's worth every minute. Some of the combat may seem over simple but it does provide an engrossing tactical experience of being an American WWII commander in the Pacific Ocean. It's got atmosphere in depth.

DAS BOOT

Three-Sixty, £35.99

An unusually coherent and playable mix of action and strategy, this U-boat sim may not be as comprehensive as Silent Service 2, but it's a sight more accessible.

There are no huge manuals to read and you can get straight down to the action with training missions. These allow you to quickly get to grips with your submarine and get some quick battle experience. Most combat elements are included such as

torpedo runs and anti-aircraft gunnery

TEAM YANKEE Empire, £35.75

Based on Harold Coyle's novel, this is a similar game to MicroProse's M1 Tank Platoon, and a little more complex strategically. This is mainly down to having to control four platoons simultaneously.

Team Yankee is also distinguished by the use of bitmapped graphics for the 3D rather than filled polygons. This helps to give the game a more absorbing atmosphere than many other similar simulations.

M1 TANK PLATOON MicroProse, £40.86

A good tank simulation, made better by the fact that (as the name suggests), you take charge of a whole group of the metal beasts. There is a choice of engagements ranging between easy and hard, with optional enemy capabilities, from second line troops to the

very best. Well structured and engrossing.

RAILROAD TYCOON MicroProse, £35.75

A completely unique game – take control of a fledgling railway in the heyday of steam and use your business acumen to take it across an entire continent – wiping out, or buying up, the opposition on the way. This forerunner of the superb strategy game Civilization is definitely not to be missed.

SHUTTLE

Virgin, £49.99

Reviewed in Issue 5, this comprehensive space flight simulator is based on NASA's space missions up to the ill-fated Challenger in 1986. Incredibly detailed and will need concentrated hard work before you get into it and become proficient, but it's worth it – the authenticity is second to none.

Rated 8

PC Review Recommended

HARPOON CHALLENGER PACK

Three-Sixty, £49.99

A good value package which comprises the highly-acclaimed naval simulator, plus its North Atlantic Convoy BattleSet – a must for serious naval strategists.

UMS II

Rainbird, £40.86

Make your own wargames with this extraordinarily complex but powerful wargame generator. A program for anyone who feels serious about strategy gaming.

STRATEGY WAR

COMMAND HQ

MicroProse, £34.99

Similar in some ways to the popular board game Diplomacy, Command HQ puts the player in charge of everything the West's got in any one of three historical situations and one futuristic scenario set in 2023. The scenarios increase in complexity as the date progresses. For instance, you can start out with infantry, cruisers and subs in the early scenarios and end up with nuclear weapons, satellites and other high tech equipment in

the later ones. Economics also plays a key role in the success of your war campaigns.

SUPREMACY Virgin, £34.99

Two huge civilisations battle it out for a single star system. Attack planets and then exploit them for resources vital to the war effort.

Slick graphics and a more than user-friendly interface turn what's essentially a political power struggle into a hugely enjoyable mental workout – a most rewarding evening's entertainment.

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FANTASY RPG

BUCK ROGERS

SSI, £35.75

An unusual, highly successful, computer appearance for one of the cinema's early heroes. A conversion of a TSR board game, this has all the usual SSI hallmarks: strong presentation, atmosphere and depth. It uses a variant of the AD&D computer games control system.

BARD'S TALE 2

Star Performers, £9.99
(now delisted)

The second – and arguably the most enjoyable – of the Bard's Tale series is one of the best of the 'old-style' (non-arcade) RPGs. Soon to be bundled with the other two in the series.

CORPORATION

Core Design, £34.99

Very much in the '3D arcade' vein, Corporation achieves something which most computer games can only dream of – it creates and maintains a wholly realistic environment. It's a futuristic space opera in the confines of an overrun conglomerate. You must lead an elite team, equipped with stunning high-tech gear, enter the building and find out what is going on.

ELVIRA, MISTRESS OF THE DARK

Accolade, £29.99

Although it's not exactly the type of game that you might expect from America's up-front queen of the B-movie (in other

words, it's a tenuous licence tie-in), Elvira remains an impressive (if slightly shallow) adventure, nonetheless.

MARTIAN DREAMS

Origin, £36.99

Origin's second adventure outside of the acclaimed Ultima stable is an historic sci-fi jaunt in the style of H.G. Wells. Flawed, but enjoyable.

TUNNELS & TROLLS

New World, £30.99 (now delisted)

Once again based on a popular board-based RPG, T&T doesn't have a lot to offer in the presentation department, but makes up ground with a well structured

plot. Combat can be automatic or manual and can even be humorous – such as pushing enemies away. Perhaps a little dated.

WASTELAND

Electronic Arts, £24.99
(now delisted)
Not notable for its up-to-date interface, Wasteland is however worth checking out for its unusual scenario – a post-holocaust nightmare replaces the usual dungeon-based stuff.

THE SAVAGE EMPIRE

Origin, £35.99

The one that came before Martian Dreams, Savage Empire borrows from the plot

EYE OF THE BEHOLDER

SSI, £25.99

Conceived and executed in the style of the classic Dungeon Master, Eye of The Beholder is exciting and challenging in equal measure. It's one of the highly-successful Advanced Dungeons and Dragons games based on the TSR role-playing tabletop game. First you must choose your party of adventurers, their race (human, dwarf, elf etc) attributes (strength, intelligence) and a whole host of other details. The adventurer's view is of a 3D dungeon and all the controls are mouse-driven. SSI has managed to maintain the feel and atmosphere of the original game while making the AD&D experience available to a lot more people.



BRAIN TEASERS

LOGICAL

Rainbow Arts, £19.99

Nicely paced and colourful arcade-based teaser which may just fail to provide any long-term interest.

E.MOTION

US Gold, £35.00

An infuriatingly compulsive arcade teaser that's as hard to describe as it is to put down. It involves matching coloured balls together causing them to disintegrate. When they have all gone you move to another level – of which there are 50. Only approach it if you've got a lot of time on your hands. It was – and still is – an wholly original game.

SARAKON

Leisure Genius, £19.99

Similar to Shanghai, and also based on Mah Jongg, Sarakon stands head and shoulders above most of its contemporaries – in terms of difficulty at least. A 16x16 squared grid forms the basis, Square tablets each with a variety of symbols are placed randomly on the grid. The idea – as with many card games – is to combine and discard pairs of tablets until the grid is cleared. However, tactical play adds complexity. The first level of play is called 'Stupid' and that's how you'll feel when you fail to complete it. Not for the faint of heart.

THE SENTINEL

Firebird (now delisted)

Worth scouring the bargain bins for, Geoff Crammond's masterpiece is a rare breed – a strategy game loosely comparable to chess which can only exist inside a computer.

Easily the most atmospheric game of all time.

SPOT

Leisure Genius, £24.99

Easily confused with the board game Othello, this is actually an original game of its own – and a rather good one too. The original game is now quite old, but was recently revamped and relaunched.

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BRAIN TEASERS

CHESSMASTER 3000

Software Toolworks,
£25.99

Computer chess is computer chess – right? Well, yes ... but this one (reviewed in Issue 4) takes the pride of place through its presentation and user friendliness.

Rated 9

VAXINE

US Gold, £25.99 (now delisted)

A sort of follow-up to E.Motion, this adds an extra dimension – well, in graphic terms at least. You roam as an abstract representation of the body shooting rogue virus cells. The action ranges over 99 levels with faster and meaner germs being introduced all the time. A new age pastime for the modern puzzle addict.

WELLTRIS

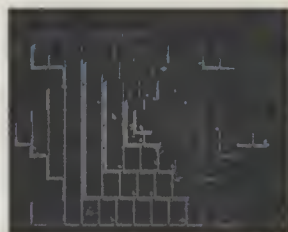
Infogrames, £30.64

From the same former Soviet scientists who brought you Tetris comes this 3D variation. The object is still to manipulate falling shapes, but the 3D aspects means the pieces appear to fall from above. It's good enough but how can you improve on perfection?

SHANGHAI II

Activision, £35.99

A test of memory and skill using the Mah Jongg card set, this is now available in numerous PD incarnations, although none as polished as this 'official' version (reviewed in Issue 1).
Rated 7



PIPEMANIA Empire, £25.53

Second only to the great Tetris as an invisible hour eater, this tale of twisting pipes and water will provide a challenge to even the hardest gamer.

KLAX

Respray, £7.99

An unusual block-based game which uses colour coding rather than shapes to generate its puzzles. Not as addictive as Tetris, but a nice short-term diversion.

LOOPZ

Audiogenic, £25.53

Unusually compulsive puzzler which adds a new twist to the art of shape manipulation. Hard to find, but worth keeping an eye out for.

NIGHT SHIFT

Lucasfilm, £30.99 (now delisted)

More of an arcade game than a pure puzzler, this does however have enough teasers incorporated to keep most gamers happy. Nicely humorous too.

TETRIS

Infogrames, £24.99

The greatest puzzle/dexterity game of all time. This Soviet sensation involves moving different shaped blocks to fit them together. Everytime a horizontal line is completed it disappears. The more lines completed, the more points you collect. Watch out for the original Mirrorsoft version, which is still the best around. A classic timeless game.

SPORT

4D SPORTS BOXING

Mindscape, £30.99

They don't look very much like boxers, but the strange polygon-based pugilists featured here certainly move like them. The game features

multi-views of the fights and also allows you to train and develop your fighters.

Control of the fighters is also comprehensive, allowing you to walk towards an opponent, back off, circle left and right

and punch. The game is most fun if played in company.

BUDOKAN

Star Performers, £10.99

Electronic Arts' multiple event martial arts challenge is still the best game of its type available. Players train in four forms of combat: karate, kendo, nunchaku and the bo staff. During fights you must keep an eye on stamina and ki levels as these determine your state of health. Excellent sound and graphics and an unusual level of depth and excitement.

HARDBALL 2

Accolade, £25.53 (now delisted)

The definitive rendition of America's favourite sport available for your computer.

LINKS

Access, £40.99

A graphically impressive and option-filled variation on the age-old theme of computer

TV SPORTS BASKETBALL

Cinemaware, £30.64 (now delisted)

Unlike most previous attempts at producing a realistic computer basketball simulation, this game doesn't try to fit in the whole court at once – and is greatly enhanced because of this. Essentially you control one on-screen player at a time, the rest of the players behave according to chosen tactics. Action ranges from pure arcade friendly game to hard-fought league matches. Competitive and playable.



golf. Be warned though, it's only for those of you with powerful machines.

PGA TOUR GOLF

Electronic Arts (available as PGA Plus with extra courses pack, £34.99)

Overall, this has to be the best golf game currently available on any computer. It may not have Links' looks or options, but it makes up for this in terms of sheer playability.

POWERBOAT USA

Accolade, £30.99 (now delisted)

A deceptively playable simulation of a sport which most of us would never even think about taking part in. Ignore the poor presentation –

this could become a favourite.

PRO TENNIS TOUR 2 Hit Squad, £9.99 (budget release imminent)

Multiple options are available, it looks good, it plays well – what more could you want? Choices include singles and doubles matches and type of court surface. There's even an option to play two on one. Reviewed in Issue 2, this is a definite ace.

Rated 8

SKI OR DIE

Star Performers, £10.99

A multi-event affair which takes a lighthearted view of Fergie's favourite winter pastime. There are five sub-games: snowball blast,

downhill blitz, acro aerials, snowboard halfpipe and the intertube thrash. Points are scored for being the fastest or being able to leap the furthest. Easy to get into and most enjoyable to boot.

TV SPORTS FOOTBALL

Mirror Image, £9.99 (now delisted)

This is, of course, American football rather than soccer. It combines strategy plays with fast arcade action. No longer the state of the art in terms of programming, but still a comprehensive and enjoyable rendition of the sport. Made more accessible than most by the usual Cinemaware TV presentation.

ADVENTURE

HEART OF CHINA

Dynamix, £39.99

Another attempt at producing an interactive movie, Heart of China is notable for its arcade subsections and – more importantly – its beautiful digitised graphics.

Set in the 1920s in Hong Kong, the basic plot involves the rescue of a nurse who has been kidnapped by a ruthless tyrant. The point and click game control interface works smooth, removing the need for any typing. This evocative action adventure is a must for VGA users.

LEISURE SUIT LARRY V Sierra, £39.99

The other side of Sierra (contrasting nicely with the 'family' style of King's Quest, etc.) is best depicted by Al Lowe's luckless lover boy, who this time around goes in search of the missing disks of Leisure Suit Larry IV.

Here Larry must interview women to find a hostess for a sleazy TV show. But to Larry's cost, the Mafia becomes involved. More cheeky chuckles for fans of the series.

SORCERERS GET ALL THE GIRLS

Legend, £30.64

Not as saucy as the title suggests, this is nevertheless an engrossing and perplexing adventure from the old school. It's really just a text adventure, but a complex, entertaining and satisfying one nonetheless.

MAGNETIC SCROLLS COLLECTION 1 Virgin, £34.99

Reviewed in Issue 1, this three game package updates some of the adventure specialist's best-loved works using the all-new 'Windows' system (as seen in Wonderland). The games included are Corruption, Fish! and Guild of Thieves. Good value.

Rated 7

THE SECRET OF MONKEY ISLAND Lucasfilm, £30.99

A real joy to play, Lucasfilm's first tale of dark doings on the high seas used the wealth of experience gained over five years of development, Indiana Jones, etc, to produce one of the best adventures yet. The game is divided into three parts: the first deals with hero Guybrush Threepwood's attempts to become a pirate; the second his journey to Monkey Island; and the third all about the island itself. Good music, neat animation and

detailed graphics and a superb control system all combine to produce an enjoyable experience.

THE SECRET OF MONKEY ISLAND 2 Lucasfilm, £39.99

More buccaneering brilliance with a smile on its face, as the original's hero, Guybrush Threepwood, once again takes on the evil ghost pirate LeChuck. This game demonstrates just how many brain-teasers can be constructed within the limitations of an icon-based control system. Outstanding VGA graphics with impressive lighting and shading add to the piratical atmosphere. It's also packed with jokes. Reviewed in issue 3, this is a perfect progression from the original.

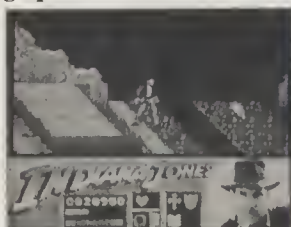
Rated 9

SPACE QUEST IV Sierra, £39.99

In yet another ongoing saga, Sierra's comical space hero,

INDIANA JONES AND THE LAST CRUSADE Lucasfilm, £30.99

One of the great animated graphic adventures, with plenty of atmosphere, and humour, which has only really been surpassed by Lucasfilm's subsequent efforts (now available in a double pack with Zak McKracken And The Alien Mindbenders).



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ADVENTURE

Roger Wilco, once again boldly goes on a mission that's about as much to do with time travel as space exploration and never takes itself too seriously. Sierra fans will know exactly what to expect – the unexpected! And that means he has somehow landed slap bang in the scenario for Space Quest XII: Vohaul's Revenge and becomes involved with the Sequel Police who believe Roger's adventures have gone on far too long. Easy point and click interface control, odd-ball puzzles and digitised artwork.

SPELLCASTING 201

Legend, £34.99

Like Sorcerers Get All The Girls, this one was developed by the master of the tongue in cheek adventure game, Steve Meretzky. Reviewed in Issue 1, Spellcasting will appeal to any adventurer who doesn't take things too seriously.

Rated 7

WONDERLAND

Virgin, £34.99

An adventure built and played through an all-new 'Windows-style' user interface, Magnetic Scrolls' Wonderland turns Lewis Carroll's masterpiece into an absorbing beautiful game.

KING'S QUEST V

Sierra, £39.99

Roberta Williams' King's Quest was the original animated adventure game – and over the years the series has gone from strength to strength. Highly entertaining and user-friendly, this is well worth clearing out your hard disk for.

CRUISE FOR A CORPSE

US Gold, £30.99

A whodunnit set on the Karaboudjan yacht in the 1920s featuring Delphine's Cinématique graphic interface. Reviewed in Issue 6.

Rated 8

ARCADE STRATEGY

BATTLETECH 2

Infocom, £35.99

Based on a highly popular futuristic combat board game, Infocom's Battletech showed in no uncertain terms that there was potentially more to that late, great company than text adventures.

Here huge mechanised monsters – Mechs – stride the land battling out with huge and powerful weapons. But this isn't just a shoot 'em up. There is a large degree of strategy involved. Reviewed in issue 3.

Rated 5

3D CONSTRUCTION KIT

Domark, £49.99

Build your own 3D worlds with this unusually powerful game creator from the team that brought you Total Eclipse and Driller. As well as constructing the geometric scenery, you can also add your own borders and music, and set up animated effects.

CASTLES

Electronic Arts, £34.99

Probably the only computer game ever to be set in Wales, Castles sees the player design, build and then defend a castle. One for the long-term strategist.

BATTLE CHESS II

Electronic Arts, £29.99

A follow-on from EA's original animated chess game, this brings the pieces to life in the same humorous way as its predecessor, while introducing the more unusual rules of Chinese Chess to a Western audience.

ELITE PLUS

MicroProse, £39.99

Not so much a sequel as an upgrading of the classic space trading game. The aim is to achieve elite status in the areas of combat, trading and piloting your ship. The space battles are immense fun, providing a clean contrast to the trading sections.

STAR TREK: 25TH ANNIVERSARY

Interplay, £34.99

Attractive rendition of the long-running TV series which concentrates on playability rather than authentic, digitised character portraits. You play Captain Kirk, with eight different missions to accomplish with the help of your crew. Atmospheric, if not very profound.

Rated 7

PC Review Recommended

GODS

Renegade, £30.99

Reviewed in Issue 4, this was the first attempt at an arcade

adventure by the Bitmap Bros.

"The best platform game to appear on the PC to date."

Rated 8

POPULOUS

Star Performers, £10.99

This is one of the rare breed that's so mould-breaking that it's almost become a generic term. Now available in a double-pack with Sim City, this is unusual, indescribable and a true work of genius – buy it.

MIDWINTER

Rainbird, £35.75

An instant classic, Maelstrom Games' 3D extravaganza looks so good that you might just forget it's an all-action game too. It covers 'green' issues including global warming and the threat of a new ice age. A landmark in computer entertainment. Look out also for its sequel, Flames of Freedom, which boasts more of everything (locations, characters, vehicles), with a similar playing style.

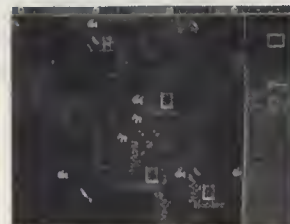
CIVILIZATION

MicroProse, £39.99

From the pen of Sid 'Railroad Tycoon' Meier, Civilization (reviewed in Issue 1) takes the player on a power trip through history. As the leader of

a pre-historic wandering tribe you start out by finding a place to settle, expanding your population and the lands they inhabit. Slowly you lay the foundations of a society, building roads, towns, cities etc, and prepare for attacks from barbarian tribes. An immensely satisfying strategy game of planning, conquest, negotiation and exploration. Thoroughly addictive.

Rated 7



POWERMONGER

Electronic Arts, £34.99

Bullfrog's next one on from Populous didn't have quite the same impact as its predecessor, but it remains a classic war game and graphically impressive to boot.

The amount of detail in the game is incredible – birds rustling feathers, voices of blacksmiths in their workshops and cheering. An epic entertainment. Check out the review in Issue 3.

Rated 8

STELLAR 7

Dynamix, £39.99

Remember the original arcade game Battlezone? Dynamix' interpretation is a bit more colourful, but thankfully the old-fashioned game play has

not been thrown out with the old-fashioned presentation. It's just as addictive now as then and well worth a look.

LIFE & DEATH II

Software Toolworks, £25.99

Your chance to work in the theatre – the operating theatre that is. Hilarious, messy and harmless, exactly what computer games should be.

SIM CITY

Infogrames, £29.99

Maxis' mix of town planning, crisis management and downright megalomania has achieved the impossible – to make urban politics fun! Build up your town from a green field site, populate it

with people, give them a transport network and services, and then try to maintain law and order as they take on a life of their own. Definitely not to be missed.

SIM EARTH

Ocean, £40.86

Not so much a world manager as a world builder, Maxis followed Sim City with an educational tool based on the Gaia hypothesis and puts the player in charge of every single aspect of a living planet, from the raising and lowering of land masses to the creation and population of the seas. Complex in the extreme, and detailed enough to keep your interest for many months. You need a 286 or above to really appreciate the game.

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Buyers' guide

Because all of us here at *PC Review* are PC users as well as reviewers we're perfectly placed to know that shopping for your PC can be a veritable nightmare, even if you're looking for something as simple as a joystick. The PC's open architecture has meant that expanding the machine is a fairly simple operation, but it's also meant that, during its 10 years of existence, the machine has attracted an enormous number of manufacturers of both hardware and software. The choice facing the potential buyer is vast and continually growing.

That's why we've set aside more than 10 pages in each issue to guide you through the quagmire of hardware and software. Within this section you'll find up to date information on the very best hardware and software available. Not only will we tell you what you can buy, but where you can buy it from and how much it will dent your pocket.

We don't claim that the guide in a single issue is exhaustive, but over the course of a few months you'll find it builds up into an invaluable reference work for PC buyers.

Happy browsing!

HOW TO USE THIS GUIDE

We've divided the guide into four easy to use sections: Hardware lists add-ons and upgrades that will improve your PC's performance or add features not available on the basic model; Software gives you a run-down of a wide-range of productivity software and utility programs; Ancillary is for those of you who want to invest in a new machine or simply keep your existing machine in tip-top condition.

Within each section you'll find that we've listed the basic capabilities of each product as well as any major plus or minus points. If you're a little confused by Technospeak (and aren't we all from time to time) just turn to our *Technical Terms* panels for a simple explanation.

All of the prices given are inclusive of VAT at 17.5%, although where there is no recommended retail price for a particular product we've listed the average price, thus: c£550. Please bear in mind that these prices do not include postage and packaging, courier charges, etc.

If you require further details on a product then simply look up the supplier in our directory where you'll find an appropriate telephone number and address.

What could be simpler?

HARDWARE

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We have done everything humanly possible to check the information in this guide. But prices do change, distribution switches from one company to another, even brand names can be updated. While we will update the information regularly to take account of this, we can't be held responsible for any errors contained herein.

Anyone – suppliers, publishers, readers – who knows of products suitable for inclusion but which have mysteriously been omitted can write in with details (write, please, don't phone) to the address at the front of the magazine.

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MEMORY UPGRADES

Most PCs will take extra memory chips, either on a slot-in card, or directly onto the motherboard – and just as well, given the latest crop of memory hungry games. The minimum RAM acceptable these days is 640K; some older PCs (such as the Amstrad PC1512) were sold with 512K. However, an increasing

number of games make use of extended or expanded memory above 640K, and you'll need a good 2Mb should you ever want to run Windows. The prices quoted here are for a selection of IBM and Amstrad machines. Prices for other clones may vary.

| Size/Type | Price | Comments | Supplier |
|---------------|---------|--------------------|----------------|
| 1Mb/Card | £94 | For IBM XT | Memory Direct |
| 2Mb/Card | £146.88 | For IBM XT | Memory Direct |
| 2Mb/Card | £164.50 | For IBM AT | Memory Direct |
| 2Mb/Card | £246.75 | For IBM AT (LIM 4) | Memory Direct |
| 4Mb/Card | £339.57 | For IBM AT (LIM 4) | Memory Direct |
| 640K/Chip Set | £29.95 | For Amstrad PC1512 | Evesham Micros |
| 4Mb/Chip Set | £160 | For Amstrad PC2286 | Evesham Micros |
| 16Mb/Chip Set | £815.45 | For Amstrad PC2386 | Memory Direct |

TECHNICAL TERMS

The original XT's and AT's could only directly address a maximum of 640K of RAM, but there are two methods of extending the available RAM on these machines. The first is known as **Extended Memory** (memory located above the first megabyte which can be directly addressed by the 80286 and its successors), while the alternative is **Lotus Intel Microsoft Expanded memory Specification (LIM EMS)**, named after the three companies that developed it. **LIM 4** is the latest version of this, designed to work with DOS version 4.0 and beyond. Most software that uses extended or expanded memory is configured to work with only one of these systems, so you should check which of them your applications support before you make a buying decision.

HARD CARDS

No room for a hard disk drive? Want a simple plug in, cheaper solution? Hard cards fit into a free expansion slot and can be used as a conventional hard drive.

•The XL versions of Time's Smartcards are supplied without driving software. If you wish to buy the version with the software please add £47 to the listed price.

| Model | Type | Capacity | Speed | Width | Price | Supplier |
|-----------------|-------|----------|-------|-----------|---------|----------|
| Smartcard 30XL | XT/AT | 32Mb | 24ms | 1 Slot | £205.62 | Time |
| 32MbXT | XT | 32Mb | 40ms | 1.5 Slots | £186.83 | RSC |
| Smartcard 40XL | XT/AT | 40Mb | 24ms | 1 Slot | £229.13 | Time |
| 45MbXT | XT | 45Mb | 19ms | 1 Slot | £233.83 | RSC |
| 45MbAT | AT | 45Mb | 19ms | 1 Slot | £233.83 | RSC |
| Smartcard 100XL | XT | 100Mb | 19ms | 1 Slot | £417.13 | Time |
| Smartcard 100XL | AT | 100Mb | 19ms | 1 Slot | £534.63 | Time |

TECHNICAL TERMS

Cards which occupy **1.5 slots** will prevent you from plugging a full length card into the adjacent expansion slot, so check the arrangements of existing cards in your PC and plan carefully if you intend to utilise any unoccupied slots in the future. The **speed** of a card is an indication of its average **seek time** (the time it takes for the read/write heads to reach the appropriate location on the disk).

•RSC's cards are supplied with a free copy of Norton Utilities v.5 (RRP £139)

HARD DISKS

| Model | Interface | Capacity | Speed | Size | Price | Supplier |
|------------------|-----------|----------|-------|-------------------|---------|------------------------|
| Seagate ST325N | SCSI | 32Mb | 28ms | 3.5" 1" high | £205.63 | Dataplex |
| Seagate ST351A/X | AT/XT | 42Mb | 28ms | 3.5" 1" high | £193.88 | Dataplex |
| Seagate ST125A | IDE | 21Mb | 28ms | 3.5" half height | £170.38 | Corporate Upgrades Ltd |
| Seagate ST157A | IDE | 44Mb | 28ms | 3.5" half height | £163.33 | Corporate Upgrades Ltd |
| Seagate ST225 | MFM | 21Mb | 65ms | 5.25" half height | 135.13 | Dataplex |
| Conner CP3024 | IDE | 21Mb | 27ms | 3.5" 1" high | £176.25 | Unimart Computers Ltd |
| Conner CP3044 | IDE | 42Mb | 25ms | 3.5" 1" high | £217.38 | Unimart Computers Ltd |

TECHNICAL TERMS

You can only fit an internal hard drive if you have a suitably sized spare drive port in your machine. If you are at all unsure you should first check with the supplier of your machine which size of hard drive you will be able to fit. There are a number of different hard drive interfaces in use so make sure that you buy the appropriate drive.

If you're using a PC which has only floppy disk drives, then a hard drive could change your life. With capacities ranging from 20Mb to well over 100Mb (more in business heavyweight machines), you can store all your programs, all your data, on the one drive, and still access it far more quickly than on floppy. No more disk-swapping every five minutes, no more booting DOS from floppy every time you switch on. Also, more and more games these days actually require you to install them on a hard disk.

GRAPHICS CARDS

The PC has had a long and chequered history of different graphics standards, thanks to IBM's decision not to include graphics at all in the original machine. The current best standard now for games is VGA (Video Graphics Array): with a maximum of 256 colours on-screen, this really shows off the potential of PC games.

| Type | RAM | Size | Resolution | Colours | Price | Supplier |
|----------|-------|--------|------------|---------|--------|---------------------|
| Hercules | 64 Kb | 8-Bit | 640x350 | 2 | £28.20 | Watford Electronics |
| CGA | 64Kb | 8 bit | 320x200 | 4 | £37.60 | Watford Electronics |
| EGA | 256Kb | 8-Bit | 640x350 | 16 | £76.38 | Watford Electronics |
| VGA | 512K | 16 bit | 1024x768 | 256 | £92.83 | Dataplex |
| SVGA | 1Mb | 16 bit | 1024x768 | 256 | £92.83 | DS Computers |

• Watford Electronics graphics cards are all supplied with a built-in parallel printer port.

SOUNDBOARDS

Until recently, the best the PC could produce in the way of sound was 'beep'. But the advent of soundboards has changed things dramatically. A soundboard will take up a single expansion slot and produce genuine music and background sound effects in the games which support it – which is an ever-increasing number these days. Below are the 'standard' soundboards catered for by most titles.

| Name | Supplier | Price |
|---|--------------------|---------|
| AdLib | Mindscape | £89.99 |
| Comment Currently the most popular system, and a good trade-off between price and performance. | | |
| LAPC-1 | Roland | £379.00 |
| Comment Superb sound quality probably priced out of the reach of many games players. Non AdLib-compatible. | | |
| SoundBlaster v2.0 | WestPoint Creative | £139.95 |
| Comment AdLib-compatible and capable of producing sampled sounds. Try it with Wing Commander 2 to hear what we mean! | | |
| SoundBlaster Pro | WestPoint Creative | £249.95 |
| Comment Has all the features of soundblaster, but is compatible with many CD ROM games. | | |



JOYSTICKS

No provision is made in the design of the standard PC to plug a joystick in directly. You'll need a joystick card in one of your expansion slots which allows an analogue joystick to be plugged in. A number of manufacturers sell both cards and joysticks together. For flight sims and racing games,

yoke and pedal style controllers are also available.

- The Tecniche stick is available without games card for £17.61
- The Analog sticks are both available without games cards for £12 and £15 lower than the marked prices respectively.

| Product | Price | Supplier | Comments |
|-------------------------|--------|-----------------------|-------------------------------|
| Anko AK-GC27A | £19.95 | ABS Computer Supplies | Auto-fire option |
| IBM Joystick | £19.95 | Computer Mates Ltd | Includes games card |
| Powerport 2 | £63.45 | Power Mark | Self-adjusting PS/2 Twin Port |
| The Yoke | £57.58 | Power Mark | Self-centring Yoke |
| Gravis Analogue Stick | £48.18 | Power Mark | 8 Tension adjusters! |
| Tecniche PC Power Stick | £23.49 | RSC Ltd | Includes games card |
| Analog Edge | £29.99 | Evesham Micros | Includes games card |
| Analog Xtra | £39.99 | Evesham Micros | Includes games card |
| Gravis PC Mousestick | £89.95 | RC Simulations | Includes games card |

MICE AND TRACKBALLS

Many games are tailored to be easily controllable with a mouse, which is much more of a standard PC add-on than a joystick. Then again, there is the trackball, which in effect is an upside-down mouse, with you moving the ball directly to control on-screen movement – useful if your desk space is limited or you're using it with a portable machine.

| Product | Price | Supplier | Comments |
|---------------|--------|-----------------------|-----------------------------------|
| Genius GM6000 | £28.95 | ABS Computer Supplies | Includes pocket, pad and software |
| Genius GMF302 | £37.95 | ABS Computer Supplies | As above, higher resolution |

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Tel : 091 230 0239

GAME LIMITED

| Product | Price | Supplier | Comments |
|---------------------|---------|-------------------------|----------------------------------|
| Anko AKTB500 | £49.95 | ABS Computer Supplies | Trackball with 'drag button' |
| Logitech Mouseman | £62.28 | Acolyte Services | |
| Cordless Mouseman | £116.33 | Acolyte Services | Uses radio technology |
| Logitech Pilot | £45.83 | Dataplex | |
| Tec-Mouse | £34.08 | Dimension Computers Ltd | Includes paint software |
| Microsoft Ballpoint | £104.58 | Dimension Computers Ltd | Trackball for portables |
| Amstrad Mouse | £22.33 | Dimension Computers Ltd | Works with Amstrad PCs |
| Axelen Mouse | £21.15 | DS Computers | |
| Truemouse | £22.99 | Evesham Micros | Serial/ PS/2 /Amstrad versions |
| Cordless Truemouse | £49.95 | Evesham Micros | As above but with infra-red link |
| Golden Image Mouse | £34.95 | Evesham Micros | Optical Mouse |
| Trackball | £39.99 | Evesham Micros | Features lock drag |
| Mousepen | £116.33 | KSI | Mouse shaped like a pen |
| Unmouse | £159.80 | Picture Perfect UK Ltd | Tablet - use finger as |
| mouse!Nakasha Mouse | £41.13 | RSC Ltd | Includes DPaint II |
| Squik Mouse | £19.98 | RSC Ltd | Low cost serial mouse |

TECHNICAL TERMS

A Mouse or Trackball requires a suitable **driver** to be installed before it will operate. Most devices are supplied with suitable software, but you should check first with the manufacturer. You should also note that there are different types of mice and trackballs designed to work with different systems (eg **Serial** and **Microsoft Compatible**), so make sure that you are buying the device that is correct for your model of PC.

MODEMS

Get your PC to be more sociable. A modem will connect you to other PCs via the telephone lines, giving you access to bulletin boards, public database networks and multi-user games - or you can simply use it to send messages to friends.

| Product | Price | Manufacturer |
|-------------------------------|----------|--------------|
| Biscom (internal) | £258.50 | Dataflex |
| Biscom (external) | £323.13 | Dataflex |
| Comfax (internal) | £387.75 | Dataflex |
| Comfax (external) | £517.00 | Dataflex |
| Courier 2400e Quad (internal) | £464.13 | Miracom |
| Courier 2400e Quad (external) | £522.88 | Miracom |
| Keycard 3000 V22 | £346.63 | Miracom |
| Keycard 3000 V22 BIS | £464.13 | Miracom |
| PC Professional | £517.00 | Dataflex |
| Quadcom (internal) | £387.75 | Dataflex |
| Quadcom (external) | £517.00 | Dataflex |
| Rapier (internal) | £646.25 | Dataflex |
| Stradcom (internal) | £193.88 | Dataflex |
| Stradcom (external) | £229.13 | Dataflex |
| WS4000 (SB2422) | £186.83 | Miracom |
| Quattro 2400 | c£500.00 | Dowty |
| Smartmodem 2400 Quad | £339.57 | Hayes |
| SM2400 | £222.08 | Amstrad |
| Milgo Maxam IV | £468.83 | Racal |
| 2400 MNP Class 5 | £468.83 | Worldport |

TECHNICAL TERMS

PC Modems come in two types: **internal** and **external**. Internal versions require a spare expansion slot, but they are usually £50 to £100 cheaper than their external counterparts. External versions plug into a **serial port** instead. If you are going to use your modem mainly to communicate with one other party (e.g. a particular bulletin board) then you should first check which **protocol** is in use by them and buy the appropriate modem.

DOT-MATRIX PRINTERS UNDER £300

Dot matrix printers are coming down in price, but at the same time the quality is improving: letter quality modes are no longer dotty or lacking true descenders on letters such as 'g' or 'y'. This is particularly true of models with a 24-pin printhead. This is probably a good time to buy.

| Company/model | Price | Speed | Buffer | Type |
|-----------------|---------|--------|--------|--------|
| Amstrad DMP3160 | £233.83 | 160/40 | 16K | 9-Pin |
| Brother M-1209 | £264.38 | 168/35 | 2K | 9-Pin |
| Citizen 124D | £292.58 | 120/40 | 8-32K | 24-Pin |

| Company/model | Price | Speed | Buffer | Type |
|-----------------------|---------|--------|--------|-------|
| Epson LX850 | £269.08 | 200/30 | 4-32K | 9-Pin |
| Mannesmann Tally MT81 | £186.83 | 155/26 | 8K | 9-Pin |
| Olivetti DM109 | £257.33 | 240/36 | 21K | 9-Pin |
| Panasonic KX-P1180 | £252.63 | 192/38 | 2-K | 9-Pin |
| Samsung SP 0930N | £222.08 | 300/50 | 3-11K | 9-Pin |
| Seikosha SP1900AI | £116.33 | 192/40 | 1K | 9-Pin |
| Seikosha SP2000 | £233.83 | 160/40 | 6K | 9-Pin |
| Victor VP10D | £210.33 | 175/30 | None | 9-Pin |

TECHNICAL TERMS

A printer's **speed** is a measurement of the number of characters it can print per second. The first figure is for **draft mode** and the second figure is for **Near Letter Quality (NLQ) mode**. The **Buffer Size** is an indication of the amount of internal memory the printer has. The higher this figure is, the quicker your PC will be released to perform other tasks.

INK JET PRINTERS

Ink jets are the newly fashionable item for style-conscious PC owners: with distinctly better print quality than dot matrixes, the advantage of being virtually silent.

| Company | Model | Price | Speed (Pages per minute) | Resident fonts |
|-----------------|--------------|----------|-----------------------------|------------------|
| Mannesmann | Tally | £1,099.4 | pp | 14 bitmap |
| Seikosha | OP-104 | £940 | 4 | 14 bitmap |
| Hewlett-Packard | LaserJet III | £1,749 | 8 | 8 Scalable |
| Samsung | SL-1081A | £891 | 8 | 24 bitmap |
| Oki | OL830 | £1,499 | 8 | 7 scalable Adobe |
| Oki | OL400 | £899 | 4 | 25 bitmap |
| Olivetti | PG308 | £1,399 | 4 | 24 bitmap |
| AEI | Laserstar 6 | £999 | 6 | 9 Fonts |

LASER PRINTERS

Laser printers have the same advantage of being quiet as ink jets and while they are not much more expensive, the resolution is markedly better. Laser printers are rapidly replacing dot matrix models as the standard office 'workhorse'.

| Company | Price | Speed | Buffer |
|-----------------------------|---------|---------|---------|
| Brother HJ100 | £405.38 | 142/83 | 37K |
| Canon BJ300 | £699.13 | 300/150 | 30-128K |
| Epson SQ850 | £903.58 | 600/198 | 8K |
| Hewlett-Packard DeskJet 500 | £586.33 | 240/120 | 16K |
| IBM 4072 ExecJet | £868.33 | 600/300 | 30K |
| Mannesmann Tally MT9 | £938.83 | 220/110 | 32K |
| Olivetti JP350 | £586.33 | 360/120 | 8K |

EXTERNAL DRIVES

If you don't have space for any more floppy disk drives – a problem with newer slimline models, you can always add an external model.

| Model | Size | Capacity | Price | Supplier |
|------------------------|-------|----------|---------|-----------------------|
| IBM compatibles | 3.5" | 720Kb | £109.95 | ABS Computer Supplies |
| IBM Compatibles | 3.5" | 1.44Mb | £119.95 | ABS Computer Supplies |
| IBM Compatibles | 5.25" | 360Kb | £119.95 | ABS Computer Supplies |
| IBM Compatibles | 5.25" | 1.2Mb | £129.95 | ABS Computer Supplies |
| Amstrad 2000 range | 5.25" | 360K | £57.58 | RSC Ltd |
| Amstrad 2000 range | 5.25" | 1.2Mb | £76.38 | RSC Ltd |
| Olivetti/Amstrad 3000s | 5.25" | 1.2Mb | £175.08 | RSC Ltd |

CD ROM DRIVES

Are you looking to make your PC the ultimate games machine? Then a CD ROM drive is the perfect addition. CD ROMS offer a huge storage capacity, typically the equivalent of about 700 720Kb floppy disks! The only disadvantage is the slow access speed. There are not too many games or other CD ROM applications available at the moment, but the list is growing larger every month.

| Model | Price | Supplier | Comments |
|-----------------|---------|-------------------|----------|
| Chinon CDS431 | £351.33 | SMC Computers | Internal |
| Goldstar GT2000 | £398.33 | SMC Computers | External |
| Philips CM50 | £316.08 | Diamond Computers | Portable |

•The Philips drive comes with a free copy of World Atlas and Audio Player

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HAND SCANNERS

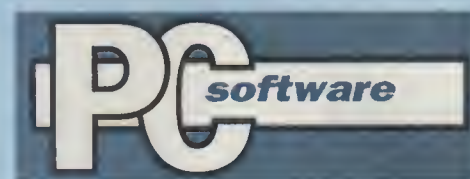
If you use any sort of Desktop Publishing package, then a hand scanner is an invaluable addition to your PC. While most hand scanners can only read small images and at a relatively low resolution, they are considerably cheaper than flatbed scanners.

- The PC Hand Scanner comes with a free copy of Microsoft Windows.
- The Marstek M105 Plus and M800 Plus are also available in versions for Windows. Add the suffix W to the model number and read the price as £139.83 and £186.83 respectively.

| Model | Price | Colours | Supplier |
|--------------------------------|---------|-----------------|---------------------|
| AG-256 | £164.50 | 256 grey shades | Watford Electronics |
| Genius GS-B105G | £176.25 | 256 grey shades | Reeves |
| PC Hand Scanner | £82.19 | 16 grey shades | UK Home Computers |
| Marstek M105 | £81.08 | 64 grey shades | RSC Ltd |
| Marstek M105 Plus | £110.45 | 64 grey shades | RSC Ltd |
| Marstek M800 Plus | £169.20 | 64 grey shades | RSC Ltd |
| Marstek M-6000 CG Color Artist | £327.83 | 262,144 colours | RSC Ltd |

DIGITISERS

While not being quite so high up on the essential DTP buy list as a scanner, a rudimentary digitiser can transform the appearance of your documents. Digitisers will allow you to import line-based artwork by tracing it with a stylus or puck. They're also ideal for Computer Aided Design applications.



GRAPHICS SOFTWARE

So you're the artistic type? If so then in the PC you have a potentially limitless canvas, not to mention a huge choice of software with which to realise your potential. Here's a selection of the best for budding Renoirs.

| Product | Price | Supplier | Comments |
|--------------------------|---------|------------------------|---|
| VBase | £175.08 | Highland Grafix | Full colour picture database |
| Clip Art | £5.88 | Cybernetic Imagination | Range of disks containing 30 images each in PCX or IMG format |
| Deluxe Paint II Enhanced | £99.99 | Electronic Arts | The standard cheap paint program for PCs |
| Deluxe Paint Animator | £99.99 | Electronic Arts | One of a range of DPaint add-ons |
| Disney Animation Studio | £99.99 | Empire | Cel animation package |
| Corel Draw v2 | £270.25 | Corel | Very popular and versatile |
| Designworks | £149.00 | GST Software | New drawing package, comprehensive and great value |

DTP SOFTWARE

The PC has always been a superb machine for DTP applications, and now that Windows 3 is firmly established this is even more the case. There are already a host of excellent DTP packages available for the PC at prices to suit every pocket. Here is just a small selection.

| Product | Price | Supplier | Comments |
|-------------------|---------|----------|---------------------------------------|
| Page Plus | £160.98 | Serif | Budget priced page layout for Windows |
| Timeworks Lite | £41.13 | GST | Simple DTP |
| Deskpress | £235.00 | GST | Timeworks and more! |
| Pagemaker | £457.08 | Aldus | Professional DTP package |
| Ventura Publisher | £587.50 | Ventura | Professional DTP Package |
| Timeworks DTP 2 | £116.33 | GST | Improved version of the budget system |

COMMUNICATIONS SOFTWARE

If you're one of those sociable types that likes to link-up, go on-line, and download from time to time then you're going to need some suitable software to get in touch with your fellow PC owners.

| Product | Price | Supplier | Comments |
|----------------|-----------|---------------------|-------------------------------|
| Sage Chit-Chat | £66.98 | Computers By Post | |
| Crosstalk | £71.68 | Computers By Post | For Windows 3 |
| Eazlink | Shareware | Various | Try before you buy! |
| Mirror 3 | £121.03 | Computers By Post | With teletext emulation |
| PC Anywhere IV | £101.05 | Computers By Post | |
| Procomm Plus | Shareware | Various | Very Powerful System |
| Odyssey | £104.57 | Shareware Marketing | Cost effective advanced comms |

There are plenty of packages to choose from, especially in the Public Domain libraries. Here are a few we recommend you consider.

COMPOSING SOFTWARE

Gone are the days when you had to sit huddled over a second-hand Bontempo scratching notes onto a piece of torn manuscript. Most modern PC music packages make life a lot easier, some will even construct the score for you!

| Product | Price | Supplier | Comments |
|------------------------|----------|---------------------------------|--------------------------------------|
| Music Studio 3 | £70.50 | Datel | Sequencer, composer, score printing. |
| SPJunior | £163.325 | Computer Music Systems | Music package |
| Sequencer plus Junior | £64.63 | Computer Music Systems | 64 track sequencer |
| Sequencer Plus Classic | £193.88 | Computer Music Systems | 500 track sequencer |
| Cadenza | £198.58 | Digital Music | Sequencer with graphic editing |
| The Musicator | £368.95 | Digital Music | Notation based sequencer |
| The Composer's Pen | £146.88 | Composit Software | |
| Pianola | £29.38 | Clockwork Software | |
| SongWright | £99 | PC Services Scorewriting system | |

ANTI VIRAL

It's a sad state of affairs that Anti-Viral software is needed at all, but unfortunately there are still lots of people out there in computerland who haven't grown up and think it's funny to wreck other people's work and enjoyment of their machine. Naturally the same people don't think it's very funny when it happens to them. If you are one of these people then may we express complete contempt for your activities on behalf of the computing community. If you're one of the remaining 99.9% of decent, honest computer users, here are a few useful pieces of software to protect you from the aforementioned nerds.

| Product | Price | Supplier |
|--|--------|------------------------------|
| <i>Dr Solomon's Anti-Virus Toolkit</i> | £69.33 | <i>S&S International</i> |
| Comments: £99 for 4 quarterly upgrades; £275 for upgrades, monthly newsletter and fax alerts. Complete kit of tools for identification, removal of and immunisation against the dreaded virus, with other disk goodies too. | | |
| <i>The Computer Virus Protection Handbook (Colin Haynes)</i> | £27.00 | <i>Sybox</i> |
| ISBN 0-89588-696-0 | | |
| Comments: Includes 5.25" disk: The what, how and why of viruses including simulated ones on disk for quick recognition. Also covers disaster plans and industrial sabotage. | | |
| <i>The Computer Virus Handbook (Richard B. Levin)</i> | £22.95 | <i>Osborne McGraw-Hill</i> |
| ISBN 0-07-881647-5 | | |
| Comments: Lots of advice and short programs to avoid virus attacks. Covers hard disks too. | | |
| <i>PC Immunise II</i> | £39.95 | <i>SA Software</i> |
| Comments: Protects hard and floppy disks and files with three levels of detection and help screens. | | |
| <i>Virus Buster</i> | #95 | <i>VB Software</i> |
| Comments: Comprehensive and easy to install software. Checks for more than 550 viruses; first update free then #50 per year for maintenance. | | |
| <i>Norton Anti Virus Version 1.5</i> | #149 | <i>Symantec</i> |
| Comments: Comprehensive, provides protection against 700 viruses, price includes opportunity to attend Virus Clinic and access to Virus InfoLine for latest information. | | |

MISCELLANEOUS UTILITIES AND PRODUCTIVITY SOFTWARE

Can't find what you're looking for in our other software sections? Then you'll probably find it here. Below we present a pot pourri of the very best of the rest.

| Product | Price | Supplier | Comment |
|----------------------|---------|------------------|---|
| Autoroute Express | £61.10 | NextBase | First rate route planning software |
| Coursemaster | £29.38 | IntraSet | Betting aid for flat & hunt racing |
| Eight In One Gold | £115.15 | Logman Logotron | Integrated WP, spellchecker, outliner, spreadsheet, database etc. |
| Flexibak Plus | £35.25 | Nildram | Hard disk back-up utility |
| Framework IV | £458.25 | Ashton-Tate | One of the better integrated systems |
| LogoLink | £34.08 | Locomotive | Transfer files PCW-PC |
| Microtext Adaptor | £198.58 | Microtext | Half card adding teletext to your PC |
| Mini Office Personal | £29.38 | Europress | Database, WP, spreadsheet, label printer and comms. |
| Money Manager | £58.75 | Connect Software | Household Finance |
| PC2 Teletext | £176.25 | Microboss | External teletext adaptor and software |
| Printing Press | £45.83 | Power Up | Make letterheads, posters etc |
| ProBook | £52.88 | BBHW | Database and address book |
| Scoredraw | £72.00 | RDN | Comparative analysis system for football result prediction |

DEALER DIRECTORY

SOFTSPOT LTD

OXFORD COMPUTER
CENTRE
4 LINCOLN HOUSE
TURI STREET
OXFORD
OX1 2DS

TEL : 0865 794202

ERA VIRTUAL REALITY

Unit 6
The Capital Exchange
Centre
Queen Street
Cardiff
CF1 4IIQ

Tel : 0222 641089

ERA / BEATTIES

UNIT 8
THE SHIRES
LEICESTER
LE1 4FR

TEL : 0533 512697

THINK PLAN LTD

3 RIVERSIDE WALK
BISHOPS STORTFORD
HERTS
CH23 5AJ

TEL : 0279 506535

DEALER DIRECTORY

ULTIMA RETAIL

UNIT 2
THE FRIARY CENTRE
2 FRIARS WALK
READING
BERKS
RG1 1B4
TEL : 0734 568510

118 EAST STREET
SOUTHAMPTON
SO1 1HD
TEL : 0703 639419

UNIT 28
WHITE LION WALK
GUILDFORD
SURREY
TEL : 0483 506939

M.D.S COMPUTERS

UNIT 47 INSHOPS
RIGHTON HOUSE
THORNBY
STOCKOE-ON-TEES
CLEVELAND
TS17 9EP
TEL : 0642 764199

THE CARTRIDGE FAMILY

151 HIGH STREET
TEWKSBURY
GLOS GL20 5JP
TEL : 0684 290097

| Product | Price | Supplier | Comment |
|-----------------------------|---------|----------------------------|---|
| Trackmaster | £20.00 | Intraset | Greyhound racing tipster |
| Xtree Easy | £58.75 | Softsel | DOS File manager |
| 386^MAX | £79 | International Data Systems | Memory Manager |
| Hijaak | £95 | Software Paradise | Easy to use screen capture programme |
| Fast Lynx | £124.95 | Ctrl-Alt-Deli | File transfer between PCs |
| Mace Utilities | *59.00 | Software Construction Co | Intelligen full function disk recovery and optimiser. |
| Magellan | £115 | Lotus Development | File viewer that finds a file in seconds. |
| Microsoft Works | *145 | | Capable and comprehensive integrated package |
| Microsoft Works for Windows | *145 | Windows 3 | integrated package - excellent value |
| Microtext Adaptor | £198.58 | Microtext | Half card adding teletext to your PC |
| Mini Office Personal | £29.38 | Europress | Database, WP, spreadsheet, label printer and comms. |
| Norton Utilities Version 5 | £100 | Symantec | Classic disk recovery & optimiser |
| Pinch and Punch 5 | *30 | Iolo Davidson | Simple to use screen grabber |
| PC Tools V 7 | *139 | Central Point Software | Good range of easy to use utilities |
| ProBook | £52.88 | BBHW | Database and address book |
| Professional Master Key | \$25 | Shareware | Shareware counterpart of Norton utilities |
| QEMM | £65 | Quardeck | Memory Manager |
| Spinrite II | *89 | Software Paradise | A disk optimiser specially designed to detect and correct disk problems before they occur |
| System Sleuth | *99.95 | Megatech | Tells you what's inside your PC |

PORTABLES

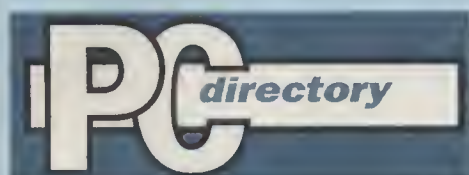
Whether for games or more serious use, a portable enables you to take your programs with you. Most are best used when you are able to plug into the mains on-site: battery power normally lasts between 1.5 to 3 hours. Portables are now becoming genuinely slim and light enough to carry around in comfort.

| Company/Model Screen | Price (ex. VAT) Slots | Speed Weight | Disk Size Size (mm) | RAM |
|-------------------------|--------------------------|-----------------|------------------------|------|
| Amstrad ACL-386SX | £3,999 | 20 Mhz | 120 Mb | 4 Mb |
| VGA LCD | Yes | 8.0 Kg | 320x400x113 | |
| Compaq SLT 386S/20 | £4,195 | 20 Mhz | 60 Mb | 2 Mb |
| VGA LCD | Yes | 6.4 Kg | 106x343x216 | |
| Dell System 320LT | £1,999 | 20 Mhz | 20 Mb | 1 Mb |
| VGA LCD | Optional | 6.8 Kg | 318x89x360 | |
| Epson AX 3/33 | £5,999 | 33 Mhz | 80 Mb | 4 Mb |
| VGA LCD | Optional | 7.8 Kg | 360x325x110 | |
| NEC Prospeed 286 | £3,145 | 16 Mb | 40 Mb | 1 Mb |
| VGA LCD | No | 6.8 Kg | 330x376x89 | |
| Olivetti A12 | £1,199 | 12 Mhz | 20 Mb | 1 Mb |
| CGA LCD | No | 2.95 Kg | 297x210x52 | |
| Panasonic CF-270 | £2,195 | 16 Mhz | 20 Mb | 1 Mb |
| VGA LCD | No | 3.1 Kg | 310x245x44 | |
| Philips PCL101 | £799 | 10 Mhz | No | 1 Mb |
| CGA LCD | No | 1.6 Kg | 220x280x28 | |
| Samsung 386S/16 | £2,220 | 16 Mhz | 60 Mb | 1 Mb |
| VGA LCD | No | 3.2 Kg | 297x213x51 | |
| Sanyo MBC-17NB | £1,495 | 12.5 Mhz | 20 Mb | 1 Mb |
| VGA LCD | No | 3.2 Kg | | |
| | 310x255x52 | | | |
| Sharp PC-8501 | £7,995 | 20 Mhz | 100 Mb | 2 Mb |
| VGA LCD | No | 6.9 Kg | 318x399x94 | |
| Tandy 1500HD | £1,300 | 10 Mhz | 20 Mb | 1 Mb |
| CGA LCD | No | 2.7 Kg | 309x245x94 | |
| Toshiba T3100SX | £3,850 | 16 Mhz | 40 Mb | 1 Mb |
| VGA Plasma | Optional | 6.8 Kg | 360x310x80 | |
| Zenith Supersport SX | £2,795 | 16 Mhz | 40 Mb | 1 Mb |
| VGA LCD | No | 7.7 Kg | 380x310x85 | |

MAINTENANCE AND REPAIR

A variant of Parkinson's Law states that your computer probably won't go wrong while you still have that 12 month, on-site warranty intact. Once it expires, that's when the machine will start playing up. Below we list some of the companies which will provide you with a service contract and then come to your rescue.

| Company | Price | Duration | Call Out |
|-----------------------|----------------|----------|-------------|
| Data Recovery Service | | | |
| AEM | 10-12% value | 5 years | 24-48 hours |
| FMG | Up to £470 PA | 5 years | Next day |
| Kalamazoo | 9-12% of value | 5 years | 8 hours |
| Newbury Data | 6-12% of value | Flexible | 8 hours |
| Response | 8-11% of value | Flexible | 8 hours |



Below you'll find contact numbers and addresses for all the suppliers we've mentioned in the sections covering hardware and serious software.

| | |
|--|-------------------|
| ABS Computer Supplies | 071 224 8320 |
| 4 Shouldham Street, London, W1H 5FG. | |
| Acolyte Services | 041 848 0055/0066 |
| Victoria Buildings Business Centre, Violet Street, Paisley, PA1 1PA. | |
| AEG Olympia | |
| The Ridgeway, Iver, Bucks SL0 9HX | 0753 630111 |
| AEM | 0684 850505 |
| Unit 4, Tewkesbury Ind Est., Green Lane, Tewkesbury, Glos., GL20 8HD | |
| AKORE Limited Shareware | 0800 252221 |
| 7 Fishergate Point, Lower Parliament Street, Nottingham NG1 1GD | |
| Freepost, Akore, Nottingham, NG1 1BR | |
| Amstrad (Centresoft) | 021 625 3302 |
| Amstrad plc | 0277 262326 |
| PO Box 462, Brentwood, Essex, CM14 4EF | |
| Brother | |
| Shepley Street, Audenshaw, Manchester M34 5JD | 061 330 6531 |
| Canon UK | 081 773 3173 |
| Manor Road, Wallington, Surrey SM6 0AJ | |
| Citizen Europe | 0895 272621 |
| Wellington House, 4/10 Cowley Road, Uxbridge UB8 2XW | |
| Compaq | 081 332 3000 |
| Hotham House, 1 Heron Square, Richmond TW9 1EJ | |
| Composit Software | 0952 595436 |
| 10 Leasowe Green, Lightmoor, Telford, Shropshire, TF4 3BR | |
| Compuadd | 0272 637488 |
| 7 Great Western Way, Bristol BS1 6HA | |
| Computer Manuals | 021 706 6000 |
| 50 James Road, Tyseley, Birmingham B11 2BA | |
| Computer Mates | 0753 631101 |
| Pinewood Studios, Iver Heath, Bucks, SL0 0NH. | |
| Computer Music Systems Ltd | 071 482 5224 |
| 5-7 Buck Street, London, NW1 8NJ | |
| Computers By Post | 081 760 0014 |
| 12 Sutton Lane, Banstead, Surrey, SM7 3QP. | |
| Connect Software Ltd | 081 743 9792 |
| 3 Flanchford Road, London, W12 9ND | |
| Corel | 0703 899321 |
| Xitan, 1-4 Chevron Business Park, Lime Kiln Lane, Holbury, Southampton SO4 1QL | |
| Corporate Upgrades Ltd | 081 861 2370 |
| Premier House, 2 Daton Road, Harrow, Middx HA1 2XU | |
| Ctrl-Alt Deli | 0908 662759 |
| 26 North 12 Street, Central Milton Keynes, Bucks MK9 3BT | |
| Cybernetic Imagination Systems Ltd | 0923 252196 |
| 21A Church Road, Watford, Herts, WD1 3PY | |
| Datacom | 0256 763911 |
| Landata House, Station Road, Hook, Hampshire RG27 9JF | |
| Dataflex | 081 543 6417 |
| 10/12 Lombard Rd., South Wimbledon, London SW19 3TZ | |
| Dataplex | 0753 535557 |
| 129 Bath Road, Slough, Berks, SL1 3VW | |
| 19 High Street, Old Town, Swindon, Wilts SN14 4EG | 0793 488448 |
| Datel Electronics Ltd | 0782 744707 |
| Govan Road, Fenton Industrial Estate, Fenton, Stoke-on-Trent, ST4 2RS | |

DEALER DIRECTORY

MICROCOMP DEVELOPMENTS
UNIT 47 INSHOP
WRIGHTSON HOUSE
THORNBY
STOCK-ON-TEES
CLEVELAND
TF17 9EP
TEL : 0642 764199

PV COMPUTERS
104 ABBEY STREET
ACCRINGTON
LANCS
TEL : 0254 35345

CHIPS GAMES CENTRE
CLARK YARD
DARLINGTON
CO DURHAM
TEL : 0325 381048

CHIPS
7 Dundas Street
Redcar
TS10 3AD
Tel : 0642 488522

DEALER DIRECTORY

LOGIC SALES

50 LYNTON PARADE
CHESHUNT
HERTS
EN8 8L8

TEL : 0992 25323

Pudsey Computers Shop

161 Richardshaw Lane
Pudsey
Leeds
LS28 6AA

Tel: 0532 360650

INVICTA SOFTWARE

49 QUEENSROAD
HASTINGS
SUSSEX
TN34 1RE

Tel : 0424 444515

Data Day Computers

31A Farringdon Road
Swindon
Wilts
SW1 5AR
Tel : 0793 512073

| | |
|---|-----------------------|
| Datel London Shop | 071 580 6460 |
| 222 Tottenham Court Rd, London W1 | |
| Dell Computer Corporation | 0800 414535 |
| Millbank House, Western Road, Bracknell, Berks RG12 1RW | |
| Diamond Computers | 071 580 4355 |
| 232 Tottenham Court Road, London, W1. | |
| Digital Music | 0703 252131 |
| 27 Leven Close, Chandlers Ford, Hants, SO5 3SH | |
| Dimension Computers Ltd | 0533 517479/621874 |
| Dimension House, High Street, Leicester, LE1 4FP. | |
| Dowty Information Systems | 0635 33009 |
| Newbury Business Par, London Rd., Newbury, Berkshire RG13 2PZ | |
| DS Computers | 071 281 5096 |
| Unit 206, Belgravia Workshops, 157 Marlborough Road, London, N19 4NF. | |
| Elonex | 081 452 4444 |
| 2 Apsley Way, London NW2 7LF | |
| Epson | 0442 61144 |
| Campus 100, Maylands Avenue, Hemel Hempstead, Herts, HP2 7EZ | |
| Evesham Micros | 0386 765500 |
| Unit 9, St. Richards Road, Evesham, Worcs, WR11 6XJ | |
| FMG Ltd | 0733 371304 |
| Newcombe Way, Orton Southgate, Peterborough PE2 6SF | |
| GST | 0480 496789/496666 |
| Meadow Lane, St Ives, Cambridgeshire PE17 4LG | |
| Hayes Microcomputer Products Inc | 081 848 1858 |
| 1 Roundwood Avenue, Stockley Park, Uxbridge, Middx UB11 1AE | |
| Hewlett Packard | 0344 369369 |
| Cain Road, Bracknell, Berks, RG12 1HN | |
| Highland Graphix Ltd | 0355 264888 |
| 18 Albion Way, East Kilbride G75 0YN | |
| IBM | 081 747 0747/995 7700 |
| Freepost, London W4 5BR | |
| International Data Systems | 071 436 2244 |
| 37-41 Gower Street, London WC1E 6HH | |
| Intrasct Ltd | 0257 276800 |
| 10 Woodside Ave, Clayton-le-Woods, Chorley, Lancs, PR6 7BR | |
| Iolo Davidson | 0453 860872 |
| Scrubbetts, Bagpath, Tetbury, Glos GL8 8YG | |
| Kalamazoo | 021 411 2266 |
| Mill Lane, Northfield, Birmingham B31 2RW | |
| Kodak | 0442 61122 |
| PO Box 66, Station Road, Hemel Hempstead, Hertfordshire HP1 1JU | |
| KSI | 0590 644255 |
| Unit 1, Braxton Courtyard, Lymore Lane, Milford-On-Sea, Lymington, Hants SO41 0TX | |
| Logitech | 0344 891313 |
| Hawes Hill Court, Drift Road, Windsor, Berks SL4 4QQ | |
| Longman Logotron | 0223 323656 |
| Dales Brewery, Gwydir Street, Cambridge CB1 2LJ | |
| Lotus Development (UK) Limited | 0784 455445 |
| The Causeway, Staines, Middlesex TW18 3AG | |
| Mannesman Tally | 0734 788711 |
| Molly Millars Lane, Wokingham, Berks RG11 2QT | |
| Maplin Electronics | 0702 552911 |
| PO Box 3, Rayleigh, Essex SS6 8LR | |
| Megatech | 081 874 6511 |
| 111/113 Wandsworth High Street, London SW18 4HY | |
| Memory Direct | 0252 316060 |
| 33 Grosvenor Road, Aldershot, Hants., GU11 3DP | |
| Microsoft Technology Limited | 0734 270000 |
| Excel House, 49 De Montford, Reading, Berks RG1 8LP | |
| Microtext | 0705 5956947 |
| Birdlip Close, Horndean, Hants, PO8 9PW | |
| Mindscape International Limited | 0444 831761 |
| The Coach House, Hooklands Estate, Scaynes Hill, W Sussex RH17 7NG | |
| Miracom | 0206 844834 |
| Premier House, Telford Way, Colchester Business Park, C, Ess CO4 4QP | |
| Mitsubishi Electric UK Limited | 0707 276100 |
| Travellers Lane, Hatfield, Herts AL10 8XB | |
| Naksha | 0925 56398 |
| 29 The Wharf, Warrington, Cheshire WA1 2HT | |
| NEC | 0800 181368 |
| 1 Victoria Road, London, W3 6UL | |
| Newbury Data | 0784 461500 |
| Hawthorne Road, Staines, Middx TW18 3BJ | |
| Newstar International | 0245 265017 |
| The Widford Old Rectory, London Road, Chelmsford, Essex CM2 8TE | |
| NextBase Ltd | 0784 460007 |
| Unit 18, Central Trading Estate, Staines, Middx, TW18 4XE | |

| | |
|---|------------------------|
| Olivetti | 0908 690790 |
| 1 Deltic Avenue, Rooksley, Milton Keynes MK13 8LD | |
| PC Services | 081 658 7251 |
| 40 Rowden Road, Beckenham, Kent BR3 4NA | |
| Pace Micro Technology | 0274 532000 |
| Victoria, Saltaire, Shipley BD18 3LF | |
| Panasonic | 0344 853915 |
| Panasonic House, Willoughby Road, Bracknell, Berks RG12 8FP | |
| Phillips & Pye | 081 689 4444 |
| City House, 420/430 London Road, Croydon CR9 3QR | |
| Picture Perfect UK Ltd | 0264 333643 |
| Honeysuckle Cottage, Green Meadow Lane, Goodworth, Clatford, Andover SP11 8HQ | |
| Power Mark | 081 951 3355 |
| Premier House, 112 Station Road, Edgware, Middx, HA8 7AQ. | |
| Precision Software | 081 330 7166 |
| 6 Park Terrace, Worcester Park, Surrey KT4 7JZ | |
| Prestige Network Ltd | 0276 60073510 |
| Reynolds Green, Camberley, Surrey, GU15 4FL | |
| PC-Sig Uk | 081 877 1103 |
| 111/113 Wandsworth High Street, London SW18 4HY | |
| Pslon | 071 262 5580 |
| 85 Frampton Street, London NW8 8NQ | |
| Quarterdeck | 0245 496699 |
| The Widford Hall, Widford Hall Lane, Chelmsford, Essex CM2 8TD | |
| RDN Datasystems Ltd | 0424 752288 |
| PO Box 44, Hastings, East Sussex, TN34 2SY | |
| Reeves PLC | 0604 671277 |
| Technology House, 75 Tenter Road, Hanson Business Park, Moulton Park, Northampton NN3 1PZ | |
| Response Computer Maintenance Limited | 081 965 3225 |
| Rays House, North Circular Road, London NW10 7XB | |
| Roland UK Limited | 0252 816181 |
| Rye Close, Ancells Business Park, Fleet, Hampshire GU13 8UY | |
| RSC Corporate Computing | 0923 243301 |
| 75-77 Queens Road, Watford, Herts, WD1 2QN. | |
| Samsung | 081 391 0168 |
| Samsung House, 225 Hook Rise South, Surbiton, Surrey KT6 7LD | |
| Sanyo | 0923 246363 |
| Otterspool Way, Watford TD2 8JX | |
| SA Software | 081 998 2351 |
| 28 Denbigh Road, London W13 8NH | |
| Seikosha | 0753 685873 |
| Unit 14, Poyle 14, Newlands Drive, Colnbrook, Berks SL3 0DX | |
| Serlf (Europe) Ltd | 0602 421502 |
| PO Box 15, West PDO Nottingham NG7 2DA | |
| Sharp | 061 205 2333 |
| Sharp House, Thorpe Road, Newton Heath M10 9BE | |
| SMC Computers | 0573 550333 |
| 26 Farnham Road, Slough, Berks SL1 3TA | |
| Softsel UK | 081 568 8866 |
| Softsel House, 941 Great West Road, Brentford, Middx | |
| Software Paradise | 0800378873/0222 887521 |
| Avenue House, King Edward Avenue, Caerphilly, Mid Glam CF8 1HE | |
| Symantec | 0628 776343 |
| MKA House, 36 King Street, Maidenhead, Berks SL6 1EF | |
| Tandy | 0922 710000 |
| Tandy Centre, Leamore Lane, Walsall WS2 7PS | |
| Technomatic | 081 205 9588 |
| Techno House, 468 Church Lane, London, NW9 8UF. | |
| Time | 0254 691822 |
| Time House, Devonport Road, Blackburn, Lancs, BB2 1EJ | |
| Total Control (UK) Ltd | 0488 685299 |
| Unit 3, Station Yard, Hungerford, Berks, RG17 0DY | |
| Toshiba | 0932 841600 |
| Weybridge Business Park, Addlestone Road, Weybridge, Surrey KT15 2UL | |
| Triumph Adler | 0206 845251 |
| Ipswich Road, Colchester, Essex CO4 4EG | |
| UK Home Computers | 0793 695034 |
| Unit 22, Cheney Manor Industrial Estate, Swindon, Wilts, SN2 2PJ | |
| Unimart Computers Ltd | 081 893 8161 |
| 2 Popes Court, Popes Avenue, Twickenham, Middx TW2 5TR | |
| Victor Technology | 0494 461600 |
| Unit 1, Valley Centre, Gordon Road, High Wycombe, Bucks HP13 6EQ | |
| Watford Electronics | 0923 237774/233383 |
| 250 Lower High Street, Watford, WD1 2AN. | |
| Westpoint Creative | 0743 248590 |
| Delta House, 264 Monkmoor Road, Shrewsbury SY2 5ST | |
| Zenith | 0268 668588 |
| 452 Bath Road, Slough, Berks SL1 6BB | |

DEALER DIRECTORY

INVICTA SOFTWARE

**82 GROSVEIER RD
TUNBRIDGE WELLS
KENT
TN11 2AS**

Tel : 0892 511542

CHIPS

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Titles include: Wizards Lair, Hurtle, Kursk, EGA Startrek, Condo, Bass Tour, Tron, Golden Wombat, Monuments of Mars, PC Railroad, Sorry, Frigate, Antix, EGA Casino Games, Mahjong, PC Pool, Dungeons of Doom, Shooting Gallery, Viking, Ninja...and many, many more!

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Arctic Adventure, Duke Nukem, Aliens Laughed, Moraff's World/Pinball / Superblast, Popcorn, Kroz II, Dracula in London, Groundwar, Picture Puzzle, lots of joke programs...and much more!

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Includes Aporia, Almanac, Active Life, Kwik Draw, Icon Draw, Icon Tamer, Icon View, all nine Metz utilities, Bigdesk, Back Menu, Winzip, Whiskers, Navigator, Organise, Paintshop Pro, Snagit, Winpost, Winedit, Dozens of utility programs, over 340 Icons, Windows fonts, bitmaps, picture file conversion utilities. Contains over 10mb of Windows programs when unarchived!

WINDOWS SHAREWARE 2 (Over 115 games programs)

Titles include: Atmolds, Backgammon, Chaos, Checkers, Fractal Paint, Fireworks, Islands, Klotz, Lunar Lander, Magic, Mines, Pente, Pool, Screenpeace, Spacewalls, Sage, Space War, Tile Puzzle, Pipe Dreams, Taipei, Winfract, Winchess, Winjack, Winpoker, ...and many, many more.

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PC *review*

Introducing shareware

Although shareware has been in existence for several years, many PC users are unclear as to exactly what it is.

There is such a wide choice of software these days that it can be very difficult and costly to choose the right program for an application. The only realistic way to know whether a program is suitable is to try it out first. With shareware you can do just that.

The basic principle is that users can obtain shareware programs for just a few pounds from an authorised shareware vendor. If they find them useful, they are

asked to make a payment, directly to the author and register themselves as a user. By registering, they can expect printed manuals, updates and technical support from the author.

The amount and level of support required and documentation depends upon the complexity of the program.

The registered version of a game, may, for example, be just £5 but a full Business Finance package could be £125 or so.

However in most cases, the registered version is likely to be considerably cheaper than the

equivalent commercial program.

Of course, if a program is not found suitable, the user just re-formats the disk and uses it for something else.

Shareware software is NOT public domain. It is copyright software in the same way as any regular commercial program is – it's the method of promotion and distribution that differs.

Public domain software is where the author has relinquished his or her copyright permitting others to distribute the software. There is no request for payment from the author.

ABOUT THIS REVIEW SECTION

The purpose of this section of PC Review is to offer concise but informative reviews of what we believe to be the best programs in each respective category.

We offer a points out of ten score based on three criteria:-

1. How well does it perform the task?
2. How easy is it to use, particularly in terms of getting started?
3. Understandable documentation and help files.

Each review identifies the name of the program, author and the registration fee, where known.

In popular fields there are often many different programs available to cover a particular function. In these cases the standards are very high and consequently the rating is higher. There would be no point in offering you a sub-standard program in a well-served category.

However, in more specialised fields, there will be relatively few programs available so there may be cases when a lower rating will have to be tolerated as there is no better alternative.

Shareware programs may be obtained from a variety of sources. However, for your convenience, we have arranged that all programs featured in this review may be obtained from one source – Advantage which is a well-established, authorised shareware mail order company, based in Cheltenham.

PC Review readers can order their disks directly from Advantage either by phone, fax or post and can expect fast delivery. Advantage will also provide getting started support and advice.

As a special offer to PC Review readers, Advantage is offering a 25% discount on its regular price of £3 a disk – quote PC Review when calling or use the special priority order form at the end of this section and get your disks for just £2.25 each (both 5.25" and 3.5") including VAT.

WHICH COMPUTER?

There are so many varieties of computer and operating system (DOS) around today we cannot guarantee that all programs will work on all computers. However most programs run on a 512K RAM PC compatible running MS-DOS version 2.0 or above. A single floppy drive is usually acceptable but a dual drive or hard disk is more beneficial not just for these programs but for most of your other work as well.

A code is placed by each program if the minimum requirement is more than a basic PC compatible with a Hercules mono monitor:

CGA: Colour Graphics Adapter required with Colour Monitor.

EGA: Enhanced Graphics Adapter required with high resolution monitor.

VGA: Video Graphics Array required with high resolution monitor.

HD: Hard Disk Drive required.

Mono and CGA programs will run on an EGA or VGA monitor. Also, many CGA programs will run on a mono monitor if you load a CGA emulator program (also available as shareware).

Programs are written by a USA author unless otherwise stated.

Programs which make use of a printer expect to find an IBM or Epson-compatible. Most modern printers are.

If you have any questions about shareware or wish to discuss your requirements please call Advantage (not PC Review) on (0242) 224340.

REVIEWS

PERSONAL ORGANISERS

Aporia (two disks)

Author: Newtools

Registration: \$50

Performance: 8/10

Ease of Use: 8/10

Requires Windows 3

The heart of Aporia is the concept of tools. A tool is not just a pretty picture, it also has enhanced abilities. It can be dropped on to another to be run, or chained together to form a new tool. A tool can store other tools, letting you run multiple programs with one mouse click. It can size and position the programs it runs. And they are all fully integrated into a powerful file management scheme. Aporia is easy to use — if you choose to install Aporia as the Windows shell just run Windows as you normally do and Aporia will come up automatically. Users of Aporia can create their own Icons using either Paintbrush or a shareware equivalent drawing program in conjunction with the Image Maker program supplied with Aporia. Aporia is a powerful object oriented user interface for Windows 2.x and 3.0. It lets you organise your work simply and clearly by providing a variety of advanced features that make its icon interface really work. A comprehensive on-disc manual and tutorial are supplied.

Readability Plus (one disk)

Author: Scandinavian PC Systems

Registration: \$25

Performance: 8/10

Ease of Use: 9/10

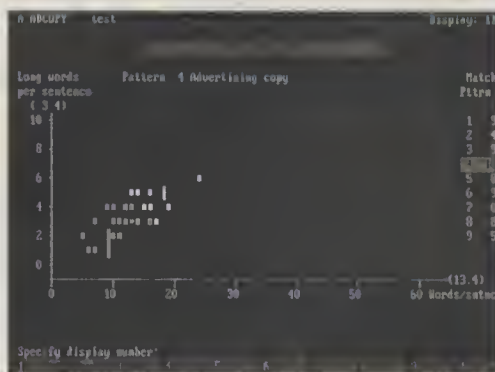
Don't confuse Readability Plus with grammar and style checkers. It starts where those programs leave off. In fact, most users have a fine command of the English language and don't need grammar checkers.

Grammar checkers correct many grammar and word usage errors. And they'll let you stipulate how strict you want those grammar rules applied through the selection of what they call business, technical and personal 'styles'. But their definition of style applies to word usage, not writing rhythm and word and sentence cadence.

In contrast, Readability Plus assumes that what you've written is mechanically correct. Rather than look for errors, it looks for sentences and words that aren't appropriate for your intended audience and purpose — those things that make writing boring and unintelligible to the reader. Compare your text with any of the nine writing style models provided with the program. 'Align' the style of your draft with the model's so that they're indistinguishable.

Whether you want to write love letters that read like advertising copy (not such a daft idea!), or technical papers that read like well-crafted magazine articles, Readability Plus gives you the writing edge that only other Readability Plus users enjoy!

It produces graphical and statistical analysis of any passage which can be tested under a wide variety of categories — newspaper, technical, magazine article, novel etc.



DESK TOP PUBLISHING

LQ Matrix

Author: J David Sapir

Registration: \$24

Performance: 9/10

Ease of Use: 8/10

LQMATRIX provides a user friendly environment for designing fast printing, text mode, fonts for Epson LQ dot matrix printers and compatibles. It comes with over

50 ready made and ready to use fonts including Script, Italics, Cyrillic, Greek, Hebrew, Large Type, Math symbols, OCR-A and B, and attractive fonts especially designed for LQMATRIX by talented graphic designers. The documentation includes instructions for using the fonts with various word processors including WP 5.1, PCWrite 3, XYwrite, and Word 5.5. The downloader, LQ.EXE, also serves as a printer setter. It can

set the printer to emphasised, bold, italics (etc.) with or without downloading. LQMATRIX and fonts are designed to use the TEXT MODE for printing user made fonts. In contrast to Graphics, this mode is as fast as using the default letters and thus is useful for printing long texts. In the Text mode the printer accepts a ('soft' or RAM) font into memory and uses it rather than the built in ('hard' or ROM) font. In fact, when so instructed, it can switch between the two. Thus if you have written a paper in English, but wish to cite examples in the Greek alphabet, you can 'download' (send to the printer) the Greek font (GREEK.LQN on this package) and use it when necessary.

Mossburn Clip Art Collection (one disk per title)

Author: Mossburn

Graphics

Registration: £12/title

Performance: 9/10

Ease of Use: 9/10

This UK author has created a large collection of high quality line and continuous tone drawings of celebrities, great statesmen, animals,

Early Bird

Author: Allan Computer Products

Registration: \$30

Performance: 8/10

Ease of Use: 8/10

There are several programs available which offer desktop diary and appointments functions.

Most of them are 'memory-resident', that is, they are available at the touch of a key, while you are in the middle of another application, for example your WP or Accounts.

Early Bird is probably one of the best user-friendly, full-featured reminder and calendar programs available.

It features simple or complex reminder types (for instance, third from the last Thursday of every ninth month), desktop calendar and scan (AUTOEXEC.BAT) modes, colour pull-down and pop-up menus, context sensitive on-line help, alarm, DOS shell, mouse support, file manipulation commands, and selectable group printing.

In addition, Early Bird offers user definable classes, notice, print, colour and display options, special sound and visual effects and reminder creation defaults. Once you try it, you'll never stop.



cartoon characters and artists. The drawings, by a variety of new artists are presented in sets of up to 5 disks in 3.5" media (720k) or 10 disks of 5.25" (360k). They are available in GEM (for Ventura Publisher) and in TIFF and in PCX formats for all other DTP routines. Sets cost the same price whatever the format or media.

The authors state that the collection, will be continually updated and extended. Many artists are already working on new titles. Their work will include great painters, writers, composers, poets, film stars, television personalities, world leaders, scientists, comic heroes, explorers, royalty...and so on.

All Mossburn Clip Art Disks, including Ornamental Drop Capitals and Scalefonts are offered free of copyright, which means that you may use them freely in publications.

The following clip-art titles are released as shareware (1 disc per title)

- Clipart: Artists writers & composers (TIFF)
- Clipart: Artists writers & composers (PCX)
- Clipart: Animals, cuties & critters (TIFF)
- Clipart: Animals, cuties & critters (PCX)
- Clipart: Film stars (TIFF)
- Clipart: Film stars (PCX)
- Clipart: Great statesmen (TIFF)

All Mossburn Clip Art disks, including ornamental drop capitals and scalefonts are offered free of copyright, which means that you may use them freely in publications.

(Please specify GEM, TIFF or PCX format when ordering shareware)

DRAWING AND PAINTING

Finger Maps

Author: Poisson

Technology

Registration: \$35.00

Performance: 8/10

Ease of Use: 8/10

Requires VGA or EGA colour monitors or B/W CGA or Hercules

Finger Maps is an object-oriented drawing package supplemented with a comprehensive database of world geographical coordinates. It can serve as a

stand-alone object drawing program, a world map maker or simply a PCX paint image file editor. The finished drawing or map can be saved and converted into a PCX bitmap or a proprietary object format. Finger Maps can read other PCX files as background image and draw objects on top of it. The screen image can be printed to a HP compatible laserjet in 300 dots per inch. Registered users will get support for both 9-pin and 24-pin Epson compatible dot-matrix printers. The Map database contains geographical coordinates of all country borders, US state borders, major rivers and lakes, US state capitals and other major US cities and foreign capitals.

HOME FINANCE

Page Cheque Book

(one disk)

Author: Gary Finlay

Registration: Not Specified

Performance: 8/10

Ease of Use: 8/10

At last someone has developed a practical system for UK users to manage financial transactions with ease and accuracy. Page Cheque Book will track your bank, credit card, building society and savings accounts online. Page Cheque Book will:-

- remember all of your regular payments and receipts.
 - remind you when recurring entries are due to be posted.
 - accept your adhoc payments and receipts.
 - reconcile your statements simply and quickly.
 - analyse your account in detail.
 - save you time and might save you bank charges.
- You can tell Page Cheque Book about any 'standing orders' you have. An order is any regular payment or receipt, eg magazine subscription, the monthly mortgage or your salary cheque. Once told, Page Cheque Book never forgets to remind you to 'post' the order on the correct date. If you attempt to 'post' it too early, you will be alerted to that fact. You can tell Page Cheque Book about your adhoc payments and receipts, e.g. cheques written, bank charges, interest charged and received. When a statement is received you can 'reconcile' Page Cheque Book's transactions against it.

Olive Accounts Controller

(two disks)

Author: Northern Data Services

Registration: £49-£149

Performance: 9/10

Ease of Use: 9/10

Requires hard disk

Olive Accounts Controller is a feature packed financial package. It is easy enough for the complete novice and yet powerful enough to meet the needs of large financial institutions. Olive Accounts Controller has been designed with meticulous attention to detail. Expert programmers working alongside some of the best accounting brains in the UK have ensured that not only is Olive powerful but that it meets the strict legal accounting requirements set for UK packages. Olive has five major sections; Nominal Ledger, Purchase Ledger, Sales Ledger, Stock Control and System Procedures and features: Powerful data integrity checking on each module.

- Easy to install.
- Can handle over 2 million customers and suppliers.
- Detailed sales and purchase invoices at the press of a button.
- Caters for credit notes and correction of payments
- Password protection on the whole system or individual ledgers.
- Comprehensive stock reporting including stock availability, sales by part per customer, stock movements and stock valuation.
- Powerful reporting on all areas of the system.
- Menu driven back-up and restore facility.
- Aged debtors report for 30, 60 and 90 days.

EGA Colouring Book

(two disks)

Author: Kinderware

Registration: £20

Performance: 8/10

Ease of Use: 9/10

All children enjoy colouring in pictures. You can now avoid all the mess of paint pots, water and dirty brushes by using the modern hi-tech method of your PC running this neat program.

EGA Colouring Book (ECB) allows children to use over 500 colours and patterns to colour full screen pictures. A selection of five pictures is supplied with the shareware version — more when you register. Children will enjoy bringing the pictures to life with colour. ECB teaches eye-hand co-ordination and encourages artistic expression. ECB is very easy to use and is suitable for children as young as 3 years — there is no need to be able to read. The only problem reported is that children have difficulty getting the parents and grandparents to stop using ECB.

Most of the common commands have picture icons which can be easily identified. EGA Colouring Book is a great program to use to introduce the computer to children. They will have so much fun, they won't even realize that they are learning basic computer skills. ECB runs in the EGA high resolution (640 x 350) 16 colour mode to provide beautifully detailed pictures and hundreds of vivid colours (produced by mixing the 16 screen colours). EGA Colouring Book will provide many happy hours of entertainment for the entire family.



- Up to six suppliers can be tied to each product to facilitate easy re-ordering of stock.
- Up to six different price breaks for each item of stock.
- Ability to link a special price to a customer to ensure consistency.
- Long list of add-on modules.
- Regular training courses are available.

Checkmate Plus (two disks)

Author: Custom Technologies
Registration: \$15.00
Performance: 8/10
Ease of Use: 7/10

One of the most popular uses of a home computer is in the control and monitoring of domestic finances. These can range from a straightforward 12 month breakdown of incoming and out going monies through to a mini-accounts package offering detailed analyses and reports.

Checkmate Plus falls more in the latter category, however. It is sufficiently well-presented and well-documented to be used in any simpler application. You don't have to make use of the more advanced features initially or at all. The strength is that the more powerful features are there to be used as you gain confidence and explore the potential of the program.

CheckMate Plus is a full-featured, easy to use, cheque book-based accounting package. It is a real accounting package, with real double-entry transactions. You can produce true balance sheets and income statements as well as numerous budgeting and graphical reports.

CheckMate Plus is intuitive, easy to use, and has extensive on-line help. To use the more sophisticated features you will need the user's guide to fully exploit its power. It comes with a disk-based introductory user's guide to aid you in evaluation. This is quite large.

Household Register (one disk)

Registration: \$34.95
Performance: 7/10
Ease of Use: 8/10

Most people have no real idea of the value of their possessions. Whilst this may not be important most of the time, should a disaster strike and they

need to fill in a wad of forms for their insurance claim, it can often be difficult to persuade the insurance company of the full value of your things.

So, before a problem occurs it is wise to take an inventory, itemising all your goods and chattels and attaching their value. What better way to do this than on your PC?

Household Register is a fully equipped database system specifically tailored to log all your household possessions with their corresponding values, analyse the data and produce valuation reports and statistics.

You can use the reports to initiate your insurance assessment and present it to the insurance company along with any claims you may need to make.

HOME MANAGEMENT

Collect!

(one disk)
Author: G L Alston
Registration: \$25
Performance: 8/10
Ease of Use: 8/10

A collector's program should be a tool. Not just one to record stuff on a computer disk instead of paper, but one that can analyse and manipulate the information. Many programs, for instance, allow you to enter the price you paid for such and such an object, but offer very little manipulation. You are not really doing anything that cannot be done with a notebook.

Collect! is an advanced specialty database that is used to keep track of the things people collect. It can also be used by small dealers. It will also serve to keep track of household inventory.

Collect! offers unique features that make this collector's database faster and easier to use than any other product:-

- Common spelling file
- Works in RAM memory, not the disk
- All data on one screen
- User changeable database templates
- Mouse Support
- Financial data
- Masked printing

Collect! is not as cryptic as some database products can be. Rather than using the standard menu system (Add, Change, Delete, etc.), Collect! uses pop-up windows and a mouse and is laid out to be easily understood.

GENEALOGY

Trees II (one disk)

Author: Tomorrow's Designs
Registration: £49.95
Performance: 8/10
Ease of Use: 8/10

In some families, there already exists a wealth of information, stored in various forms, just waiting to be ordered and examined. In others, records are patchy. Tracing further into the past involves careful investigation, following clues, hunting through public records for new leads.

The science and art of investigations, (and it has all the attributes of both), is genealogy. Investigating your heritage produces vast amounts of data, and the genealogist must find ways of recording it, then correlating it to discover the stories that lies behind it.

Trees has been designed to aid the genealogist so as to make his or her job as simple and as fun as possible. While requiring no great specialist knowledge about either computing or genealogy, it nevertheless has all the power and scope of other fully professional genealogical software.

We all share a heritage that goes back to the dawn of recorded time and beyond. Our ancestors have many tales to tell, can we but find them. And having found them, what better way to manage the information than with your PC?

Brother's Keeper

(three disks)
Author: John Steed
Registration: \$40
Performance: 9/10
Ease of Use: 8/10

Brother's Keeper is a set of programs which will help you organise your family tree information, and which will print the information in several ways.

You will be able to print descendant charts which show how anyone named in your file is related to everyone else. You may also print ancestor charts, family group sheets, alphabetically-ordered name lists, descendant trees, lists of birthdays, and customised reports.

For each person entered in the file you may include a date of birth, a date of death, and three other significant dates and you may store a place of birth, a place of death, and a place for three other noteworthy events. You also may enter two additional fields for any other events or information you feel is relevant, the subject matter for which you may define.

Each person can have up to seven message lines of additional data, or a text file of unlimited size containing notes and addenda. Each person may have up to eight marriages stored (enough, even, for Elizabeth Taylor). Each marriage record can hold a marriage date, a place of marriage and one additional date and place, and can store up to 24 children.

Brothers Keeper is a very comprehensive system which offers all the features required by the average genealogist. It therefore comes highly recommended.

PUZZLE CORNER

X-Word Wright (one disk)

Author: Peter Milne
Registration: \$15
Performance: 8/10
Ease of Use: 9/10

Here is a great way to produce your own customised crossword puzzles, quickly and accurately using the resources of your PC. You can use ready-made shells or design your own. X-WordWright supports all graphics adapters, but on some laptop machines the menu highlighting may not be clear. If you find that this is the case, try setting your display mode to Mono registered users benefit from a word search utility giving the ability to search puzzles for words that will fit in the spaces in the grid. Can get you out of some nasty corners. You also get the ability to search dictionary files for words that will fit in the spaces in the grid and the ability to search puzzles for clues that match words in the grid. Can save a lot of typing, but also allows you to review treatments that you have used before and modify them, or choose another. And if you're stuck for time, it's a must! Sample puzzles are provided and these can be printed out on any standard printer.

X-Word Wright (one disk)

Author: Peter Milne

Registration: £15

Performance: 7/10

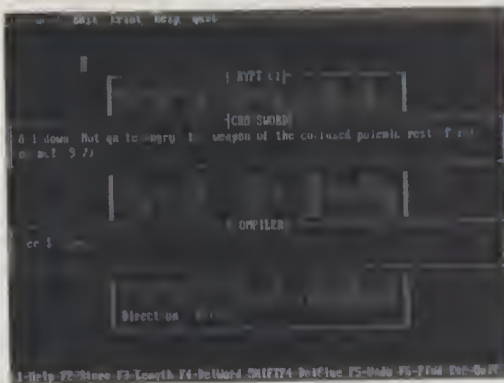
Ease of Use: 8/10

Here is a great way to produce your own customised crossword puzzles, quickly and accurately. You can use ready-made shells or design your own.

Registered users benefit from a word search utility giving the ability to search puzzles for words that will fit in the spaces in the grid. Can get you out of some nasty corners.

You also get the ability to search dictionary files for words that will fit in the spaces in the grid and the ability to search puzzles for clues that match words in the grid. Can save a lot of typing, but also allows you to review treatments that you have used before and modify them, or choose another. Sample puzzles are provided and these can be printed out on any standard printer.

In addition to your own amusement, this program is ideal for filing up the pages of your local newsletter, club magazine or for keeping the youngsters entertained on a rainy afternoon.



VGA Jigsaw (one disk)

Requires VGA

A popular domestic pastime is the traditional jigsaw puzzle. It is not without drawbacks — it takes up a lot of room, it may get messed up if you leave it alone for a few days and the biggest frustration is, right at the end, you find some bits are missing. As with many pastimes, however, there are computer variations on the theme which are neat and tidy and you can be sure there won't be any bits missing. VGA Jigsaw is a fun game of skill and intelligence. It starts out by drawing a puzzle on the screen and then it shuffles around the pieces. The object of the game is to assemble the pieces to match the original puzzle on the screen. Features keyboard, mouse, joystick support, easy menu operation, four levels of difficulty, music, score-keeping, includes a few jigsaw puzzles.

SPORTS

Pools!

(one disk)

Author: Kerry M Walsh

Registration: £10

Performance: N/A

Ease of Use: 8/10

The Wallysoft (yes really!) Football Pools Draw

Predictor works by computing a unique weighting factor for each team in the various divisions. This factor is based upon the performance of that

team, at home and away, over the most recent 15 weeks. You are required to keep this performance data up to date by entering the number of goals scored by each team and its opponent weekly. The program automatically calculates all the other data it requires from this input and discards data over 15 weeks old. To predict the draws for the next week's matches, you just enter the team numbers of the opposing teams and the program compares their weighting factors and predicts a result. If the program predicts a drawn game it also displays the 'ODDS' for that drawn game. Low 'ODDS' (1 : 1 is the lowest) indicates that the two teams' weighting factors are very close. Higher 'ODDS' indicate increasingly less likely draws. This is useful if the program predicts more draws than you require for your particular pools entry. Just discard the higher 'ODDS' draws until you have the correct number for your perm plan or entry. The author says "I chose to use the previous 15 weeks data in the prediction routine rather than the 'season so far' data because I found from experience that the predictions produced by the program grew less accurate as the season wore on. In other words, a team is only considered as good as its last 15 games".

Golf Performance Analysis System

(one disk)

Author: Q Systems UK

Registration: Fee

optional

Performance: 9/10

Ease of Use: 8/10

This unique computer system will not cure your slice, hook, shank or yips — for that you need the advice of your PGA professional! However, by identifying, and more importantly quantifying, key strengths and weaknesses any serious golfer can learn to overcome their real handicap — inadequate course strategy. Simply recording a few details for each hole played produces 1000's of useful statistics about your game. This fascinating insight into your performance can be used to develop a whole new approach to the Royal & Ancient Art of Golf. The various functions of the Golf System are selected from menus along the bottom of the screen. To the left of the menu is its title, and the current option on the menu is highlighted. This program is designed to work with even the most basic PC system and automatically introduces improved features such as graphics, colour, mouse control etc, if the hardware is there to support them. The whole of the user instruction manual is contained in the File GOLF.HLP and is available on-screen by selecting the ? option at the start of each menu. If help is requested topical information for the current menu will be displayed, and

other sections of the user manual can be accessed by selecting an option from the help menu.

The evaluation edition of the Golf system is distributed with three sample data files containing records for courses, players and scores. This will enable you to evaluate the features of the system.

Owzat!

(two disks)

Author: Brian Williams

Registration: £35

Performance: 8/10

Ease of Use: 9/10

Hard disk required

A comprehensive cricket scoring and statistic generating program designed to provide detailed and accurate analyses of match results, Club and Players' averages etc. both on screen and printed, with the minimum amount of data input. A wide variety of reports, aggregates and statistics can be generated, configured by any combination of date, competition and other qualification criteria. These can then be printed with enhanced titles etc (where a suitable printer is employed) making them highly suitable for club notice boards etc. The program takes you intelligently through all of the data entry stages, in a format consistent with popular cricket score books, basing input upon the amount of information you wish to record. Useful features include facilities to allow the generation and maintenance of a squad of regular players to reduce the amount of keyboard input. In addition a file of up to 50 Leagues and 50 Cup competitions can be held, allowing selective reports to be generated. These features not only keep typing effort to a minimum, but also help to maintain a consistency of quality in printed reports and reduce the likelihood of data entry errors. Screen colours are coded to their respective menus. This helps keep the user always aware of his position in the program structure. The program provides information and instruction in a consistent format throughout. Windows pop up to provide information, such as the squad

table or a list of previously played matches. A red message line provides options, instructions and messages at various stages throughout the program. If you make an incorrect selection from a menu, you have the opportunity to escape back to menu by pressing the ESC key.

FOOD AND DRINK

Edna's Cook Book

(one disk)

Author: Specialty Microwave

Registration: \$29

Performance: 7/10

Ease of Use: 8/10

Edna's Cook Book is for recording, filing, listing, and printing recipes. Essentially, it is the equivalent of the cookbook in which you now keep all your recipes, except that it is electronic.

The program may also be used in the preparation of cook books for publication, since it facilitates organisation and printing.

If you can type, you no longer have to deal with disorganised slips of paper and clippings thrown together in a drawer or box, only to be frustrated when you can't find that particular recipe that you remember you had, except you can't remember where it is, or what the precise name of it is.

Edna's Cook Book will take care of the tedious part, so you can get on with the real work. Good cooking.

The only thing we are not told is who Edna is!

Kim's Kitchen

(two disks)

Author: N/A

Registration: N/A

Performance: 8/10

Ease of Use: 8/10

Kim's Kitchen is more than a recipe management system. It features a fully operational database system of items and recipes from which the user can create menus, shopping lists and stock control management.

It is a useful tool for both the home cook and professional restaurateur and eliminates much of the drudgery in maintaining stock levels and creating shopping lists (or purchase orders). The program contains an alarm, a note pad, a

calculator, a conversion table and context sensitive help, all accessible by function keys.

Recipes are a set of quantities of items with instructions. Menu plans are a set of recipes and items, while your shopping lists can be created from either items, recipes, menu plans, stock levels or any mixture of the above.

There is a very comprehensive set of report handling features to complement the functionality of Kim's Kitchen. Supplied with the software are example databases and indexes.

LIFESTYLE

Having A Baby

(one disk)

Author: Greenline

Computing

Registration: \$12

Performance: 7/10

Ease of Use: 9/10

This program is a light-hearted look at choosing a baby's name. It is a limited database, drawn from a large variety of ethnic backgrounds. Some of the combinations can be quite startling, some quite plain, and some will be recognised as relatives! For best results, use a colour monitor. A printer is helpful. No special printer codes or graphics are used.

The opening screen asks for the baby's surname. After entering the surname, the menu of options is displayed. The active options are shown in red. F1 = View a random combination of names. Choosing this option will activate the option of viewing (F5) girls names or (F6) boys names. F5/F6 = View Girls/Boys names will display two columns of First name, Middle Name and the chosen surname, picked by random selection. F2 = Print a random combination of names. The same options as F1 are offered, only the list of names is sent to a printer.

The program will ask if the printer is READY. If you answer no, you will be returned to the main menu, otherwise the GIRL/BOY selection will become active again. The list will print on to 8 1/2 by 11 size paper. Printing begins immediately, so be sure the paper is positioned properly and is ready to accept data before answering.

Job Hunt

(one disk)

Author: JH Sharman

Registration: £10

Performance: 8/10

Ease of Use: 7/10

Job hunting is a skill which few of us have to practise very often and like any other skill which is not used it can get rusty. These days when jobs are hard to find and even harder to get, anything which gives us an advantage has got to be worth trying. Job Hunt (JH for short) has been developed to manage the process of finding a job. It is a mouse driven (not essential) text based windows type environment. It uses mini databases to record contacts, agencies, job applications, job interviews and questions/answers. A multi file text editor is included for writing your CV (or CVs) and a help system full of hints and tips to help you to get that job. Even if you are not currently seeking another job, JH is useful for keeping your CV up to date, as well as maintaining a contacts database for future reference. You want or need another job. You look through the classified adverts in the newspaper, but there are no adverts that require your skills, what do you do? Panic — no, plan. You have to get as much information as you can. This is normally scribbled on to scraps of paper and put into a folder — but now you can also enter it into Job Hunt and store it on a floppy disk. Remember that information you gather now may also be relevant in 10 years time.

FIRST STEPS

Sarah and Katie's First Disk

Author: Meg Noah

Registration: \$15

Performance: 8/10

Ease of Use: 9/10

Requires a colour monitor (VGA, EGA, or CGA)

There are many software packages for children ages three or four, but SarahWare is specifically aimed at infants and toddlers. It is not intended as educational but more as a stimulation by allowing them to interactively select colours and

designs which fill the screen in an animated way.

Infants quickly become fascinated by the quickly changing bright pictures. Those as young as three months old will learn to press the keys to change the design. By five months, two fisted banging begins but can be controlled by parents encouragement. By nine months the baby will have learned that certain function keys play music and have favourite letter keys.

Katie's Clock is designed to help youngsters tell the time. It operates in five time modes: normal, random, sequential, input, and digital. All times are clearly displayed on a colourful, easy to read clock face.

Options are to type in the displayed time or, conversely, set the hands of the clock to match the time stated. Good use is made of the graphics display and colours to stimulate interest.

Wunderbook

(one disk)

Author: Hung Fam Li

Registration: \$10

Performance: 8/10

Ease of Use: 9/10

There is something for all youngsters in this selection for 3-10 year olds. Each game is fun but contains a strong educational element too. Each of the five topics uses simple symbol-type menus which are selected from the keyboard or using a mouse.

Whilst the disc contains six basic topics, additional ones can be added at a later date as the child progresses.

The topics covered are objects, numbers, alphabets, words, shapes and language of different cultures. The latter may also be of interest to adults.

Each program is designed to stimulate children's memory, perception pattern recognition and language manipulation whilst also encouraging the child to explore and play.

Parents can also track their child's progress using scoring tables built into the program.

Animated Alphabet

(four disks)

Author: Tom Guthrey

Registration: \$8

Performance: 8/10

Ease of Use: 9/10
Requires EGA/VGA and Hard Disk.

The authors have decided to make full use of graphic animation techniques to teach youngsters their alphabet. The correct answer is rewarded with a variety of clever little animated sequences.

Each letter of the alphabet is displayed on the screen and, when the child presses the corresponding key a picture of an everyday object is displayed whose name begins with the letter selected.

Each picture then undergoes a clever animated sequence lasting for about 15 to 30 seconds eg A for Acorn shows a falling acorn which then grows into an oak tree which then sheds an acorn which falls and grows into a tree and so on ...

The registration copy is personalised with you child's own name which is used during the program's operation. It also includes an extra program called ABC Song.

EARLY LEARNING

Fun with Maths
(one disk)
Author: Paul T Dawson
Registration: None
Performance: 8/10
Ease of Use: 9/10
Requires at least CGA

At the outset, there is no attempt to hide the fact that these programs look like and play like arcade games. So it is likely that children will want to get stuck in to playing them. The subtle part is that they will be learning elements of arithmetic at the same time.

The games are all classic favourites including Space Invaders, a ladders and platforms game like Donkey Kong and a Hungry Snake game. They all offer a choice of four skill levels and, in order to score points, the player has to answer a series of arithmetic problems. All four basic function — addition, subtraction, multiplication and division — are exercised.

The concept and overall presentation of this program is good and it will appeal to parents and children alike.

Fun with Letters & Words
(one disk)

Author: Frank Holmes
Registration: \$15
Performance: 8/10
Ease of Use: 9/10

Developed specifically for the authors daughter to satisfy her curiosity about the alphabet Fun With Letters & Words has now grown into a multi-level reading program.

The development has been done in conjunction with reading specialists and parents. The authors have also picked up ideas watching other children use the program to ensure that it provides a good balance between play and educational activity.

The program offers plenty of on-screen help for both the child and parent. All levels are menu-selected. To get the best out of the program we recommend activities are done together.

A good introduction to the subject which has obviously had a lot of thought put into it.

Fun with Designs
(one disk)

Author: Frank Holmes
Registration: \$15
Performance: 8/10
Ease of Use: 9/10

Fun With Designs introduces the concept of simple geometric shapes and pattern recognition to youngsters (suggested age range 4-9).

It runs in either CGA or EGA mode depending what is available and, of course, offers a wider range of colours and better graphics on EGA.

Selection of shapes and colours is all straight from the screen using symbols and not words. Control is via the cursor key pad and lettered keys.

Picture elements can be moved around, erased, added and coloured. Facilities are provided for saving and loading part-finished or completed creations.

LANGUAGES

Macbeth Tutor
(two disks)

Author: Steve Herbert
Registration: \$15
Performance: 8/10
Ease of Use: 9/10

Macbeth is one of Shakespeare's most powerful tragedies, and its

elements of ambition, witchcraft and murder make any performance of it memorable. Just reading the play from a textbook can make it dry and lifeless so, this author has devised a neat computer program to make study more interesting.

The program consists of a series of activities to assist secondary school students learning the play part of their English literature studies. The student can select the activity of his choice from a series of menus. Activities include several quizzes or games, notes on a wide variety of topics, graphics of the Globe Theatre and even a competition with the chance to win worthwhile prizes. The games are designed to be fun and at the same time to provide a fairly painless way to memorise quotations, learn important speeches, and in general, to become familiar with the plot, characters and themes of the play.

GCSE French
(two disks)

Author: Mike Greenwood
Registration: £28.75
Performance: 7/10
Ease of Use: 9/10

Although there are a few French tutorial programs available on the shareware circuit, most of them only cover the basics and are not specifically aimed at students. Now UK author Mike Greenwood has produced a useful new program designed to offer practical help to GCSE French students.

GCSE French offers a range of menu-controlled options for learning the language and testing your knowledge of the language.

The general presentation is good and encourages the user to explore further. GCSE French is suitable for age 10 upwards.

A good revision aid but note that the shareware version restricts the options available in this mode. The full version has already undergone successful trials at a local college.

MATHS

X-YSee EGA
X-YSee VGA
(one disk each)
Registration: \$30 each

Performance: 9/10
Ease of Use: 7/10
XY - See supplements secondary school and college level studies in Algebra, Geometry, and Trigonometry.

XYSee is an interactive, computer-aided-instructional program featuring high resolution colour graphic displays of standard equations. XYSee includes extensive coverage of points, lines, conic sections, trigonometry, parametrics, composites, and artistic mathematics. The adaptive power of this unique, menu driven program is enhanced through the use of macros to illustrate mathematical principles and implement fully automated testing.

XYSee's game module challenges the student to solve puzzles with complexities. The goal is to duplicate the form, position, and orientation of functions by selecting proper variable values. Special help is available for identifying boundaries and zeroing in on solutions. A performance reporting module continuously tracks solution attempts and the difficulty level attained.

A version of X-Y See is also available for Hercules/CGA users (2 disks)

Learning Maths
(one disk)

Author: Robert J. Farrell
Registration: \$9.00
Performance: 8/10
Ease of Use: 9/10

How does a busy parent get his/her child to sit down and work out thirty or forty arithmetic problems without resenting the "punishment"? How can a busy parent cope with checking the answers and monitoring the performance?

The "Wizard" offers the solution to this dilemma. It is a comprehensive, competitive exerciser for arithmetic. It lets child and parent work together. Parents don't have to waste time making up problems or correcting right answers. The Wizard takes care of that. After 10 problem games he calculates the new average, checks the score against the best ever and the player's own previous best performance, announces the score, and celebrates the player's progress.

The program provides randomly generated, graded problems that cover a wide selection of the elementary school mathematics curriculum. Each type of problem has 10 levels. Each level has a target score. A score is determined both from the number of errors and the time it takes to solve 10 problems.

Since the Wizard asks for and remembers a player's age, it can and does restrict access to easier problems by age.

From age 13 up, Learning Maths presents the option of playing with negative numbers. Any level from 5 up of any type of problem may be played at any age level when using negative numbers.

Disc also includes Funnels & Buckets and the Times Tables

HUMANITIES

Build-A-Fish (one disk)

Author: Virginia Marine Science Museum

Registration: Not specified

Performance: 8/10

Ease Of Use: 8/10

Requires EGA

This strange sounding program is actually quite a good marine biology tutorial using an expert system structure. The principle is that the user designs a fish by responding to a series of questions about size, shape, fins, mouth etc. The program then extracts the nearest match held in its comprehensive database and displays an EGA picture coupled with a more detailed description. Suitable for age range 7 to 13.

The shareware version is capable of generating 67 different fish. Each fish is described briefly. This program is an interactive exhibit used on the floor of the Virginia Marine Science Museum. Build-A-Fish incorporates a timeout feature which causes the program to return to the previous menu if the keyboard is unattended.

This modification was included primarily for use at the museum so that a patron would always start at the beginning of the program and not where the last patron left it.

Historical Calendar (one disk)

Author: Bernd Kratz

Registration: \$10

Performance: 7/10

Ease of Use: 9/10

This disk features The Historical Calendar of Western Europe AD 550 to 1970 (1 to 2700). Users can select from a variety of different calendar systems — Gregorian, Julian, Jewish, Moslem, French Revolutionary, Icelandic and liturgical.

Each calendar may be viewed on-screen or printed out. Each one features special days as appropriate to that particular year. Historical information is included.

The program would be useful to top historians and as an aid in education.

SCIENCES

Senior Physics Facts (one disk)

Author: R Lamont

Registration: £10

Performance: 9/10

Ease of Use: 8/10

Senior Physics Facts is a physics tutorial for students of 15+ years of age. The topics covered in the tutorial are:-

1. Waves, 2. Sound, 3. Light, 4. Mechanics, 5. Heat and temper-

ature, 6. Electrostatics, 7. Current electricity, 8. Magnetism, 9. Atomic physics, 10. Electronics, 11. Nuclear physics.

The tutorial features interesting historical facts about many famous physicists. It is built on a hypertext system ie there are multiple levels of descriptive text "below" each key word in the text.

The tutorial makes an excellent learning and revision aid for second year students. It can be operated by either the keyboard or mouse.

Cell Biology (one disk)

Author: Leonard Ginsberg

Registration: \$20

Performance: 8/10

Ease of Use: 8/10

Requires EGA or VGA card and a mouse.

The subject of Cell Biology, particularly DNA synthesis, lends itself well to being taught on a computer as a picture displayed at the right time can explain a point far more readily than dry text.

This program is intended to help students assess their level of knowledge and review the basic concepts in the subject area. It is not intended to replace lectures or the reading of the text.

The program was designed to allow students to move through this difficult material at their

own pace. Cell Biology uses a PC tutorial System called U-Tutor and this has been applied to a number of other tutorials.

The system makes learning more interesting by combining text and graphics plus a series of question and answer routines to get you on to the next topic.

The author is a college lecturer and so is well acquainted with the needs of students. The complete Cell biology Program is available to registered users (four tutorials in all).

CHRISTIAN SOFTWARE

SamFindex (seven disks)

Author: David Bayliss

Registration: £10

Performance: 9/10

Ease of Use: 8/10

SamFindex can be used by Bible students, ministers and theologians to search the bible for words or groups of words and to display the relevant verses. It can also be used to browse or read sections of the bible. Built into Findex is a simple text editor to enable notes to be written concurrently with using Findex.

The simplest action is to search for occurrences of a single word (the current word.) The word is entered and the search initiated. Findex will then find the first occurrence of the word and you can ask it to

Melissa's Music Flashcards (one disk)

Author: Roger A Johnston

Registration: £15

Performance: 8/10

Ease of Use: 8/10

Requires EGA and mouse

In watching children try to learn the notes and keys of the music staff for piano lessons, the use of old-fashioned flashcards was boring to them (and the adults). This program was written with those flashcards in mind.

An interactive computer environment would be both entertaining and interesting. The use of this program probably requires some knowledge of music, such as what a note is, what sharps and flats do, the difference between treble and bass clefs, etc.

However, when this program is used in the context of learning a musical instrument, the theory should pose no problem. Fundamentally, this program allows one to choose the clef and the number of sharp or flats in the key signature after which key signatures and notes are displayed at random on the staff. You can guess at the note or have it displayed as a key on the keyboard. Animating the notes adds interest to the process of learning the names of the notes and keys. You can either supervise the student along with the program or let them practice at the students own pace.

A useful aid to learning the principles of musical notation.



continue finding it until it reaches the end.

Often you will wish to look at verses surrounding the one that is selected. The power of SamFindex really becomes apparent when searching for a verse using a more complex pattern.

SamFindex is designed to run on PC's and complete compatibles with Mono, CGA, EGA, VGA or Hercules display adapters. By default it writes to the screen in a way which is very quick but relies heavily on the memory layout of the PC.

MUSIC

Musician's Toolbox (one disk)

Author: D T Richards

Registration: £10

Performance: 8/10

Ease of Use: 9/10

Requires EGA or VGA

The Musician's Toolbox combines these functions. The Chord Analyser provides the musical spelling of the chord symbol sprinted on most sheet music. The relevant notes are sounded and displayed graphically on a simulated keyboard. Accepts a variety of styles of chord symbols and no difficulty should be experienced on this account.

Guitar Chord Dictionary. By pressing the space bar after using the keyboard Chord Analyser, a graphical display of the equivalent chord shape for guitar may be obtained. Three alternative possibilities are given which may vary in suitability depending on the current playing position on the guitar neck, the degree of proficiency of the player, etc.

Ear Training. Most musicians are aware of the importance of ear training (particularly in improvised music). This is also a requirement in the examinations of the Associated Board of the Royal Schools of Music and similar bodies. This module plays random intervals and requires the student to select the appropriate description.

Metronome provides a usable metronome, supporting all practical tempos and any time signature in either simple or compound time. The audio output is accompanied by a matching visual display.

Transposer provides an instant reference for transposition of

Dress Me Up (one disk)

Author: Christopher Gunn

Registration: \$35

Performance: 7/10

Ease of Use: 8/10

Requires EGA or VGA Mouse recommended

Dress Me Up is an imaginative paper doll game with a rather endearing collection of animals to dress up.

A girl and a boy may be picked from any of the four kinds of stuffed animals on the shelf to play with. The idea is to select a range of clothing to dress the doll up in.

There are blouses, skirts, slacks, hose, purses, jackets, shoes, hats, coats, shirts, sweaters and socks hidden behind the cabinet doors to choose from.

Dress Me Up comes with two complete outfits for the girl and boy animals and eight more outfits can be added to their wardrobes.

In addition to all the different clothes, a water colour box will appear on the screen and let the child paint the clothes or the animals themselves. The paint box includes polka dots, stripes, and a wild plaid. Dress Me Up quietly enhances neatness, memory and word skills and is suited to the 3-10 age range. Using a mouse is an automatic option.



notes between any two keys. As the transposition is shown for the entire chromatic scale (so allowing for the inclusion of accidentals) it is irrelevant whether the key is major or minor. For this reason, only the tonic note of the key should be entered (e.g. "G" rather than "Gminor" or "Gm").

Instrument Information provides details of the range and usability of all the most common instruments of the orchestra. This information is indispensable to musicians who wish to arrange for ensembles of instruments with which they may not be wholly familiar.

UTILITIES

PC Canary (one disk)

Author: Compass

Registration: \$19.95

Performance: 9/10

Ease of Use: 8/10

For centuries, canaries were a safety precaution in mines because they were so susceptible to deadly gases that even a small amount would kill them, a harsh but essential warning to the miners to evacuate the mine immediately. PC Canary is a virus alarm.

Installed and used properly, it may be one of the first programs to become infected by a computer virus, and will give you enough warning to eradicate the virus and recover before the virus does serious damage. It checks itself, its

associated documentation file, and the comspec (COMMAND.COM) for changes in length or content using a proprietary technology that identifies the location of the changes for analysis purposes.

Unlike other virus programs, PC Canary does not use a signature table to identify viruses; this allows it to react to viruses that haven't even been written yet. PC Canary is appropriate for use as a backup to a signature table virus alarm, or in situations where regular updating of the anti-virus software is not practical. PC Canary is different from other anti-virus programs by offering:

- Low maintenance. Since it detects the effects, rather than the signature of a virus, it is not necessary to update the software for new virus strains constantly.
- Low overhead. It is not memory-resident, and so does not require CPU cycles and memory. Since it need scan only a limited number of files for known results, it takes little processing time as compared to programs that scan all files for matches on a signature table of more than 200 possible viruses.
- Low false alarm rate. PC Canary will sound the alarm only if it, its data file, or COMMAND.COM is actually changed. It does not respond to "suspicious" activity and understands that COMMAND.COM changes when DOS is upgraded.

Top (one disk)

Author: TNC

Technology

Registration: Not specified

Performance: 8/10

Ease of Use: 8/10

Top is not just another DOS shell! It combines many popular DOS utility functions into one fast, small package, but adds several unique and productive new functions to enhance anyone's PC usage.

Featuring movable, sizable pop-up windows for most of its commands, Top allows aliasing, command line history and enhanced editing, file viewing (both ascii and hex), screen colour and mode control, and enhanced functionality for many DOS commands.

Any or all Top windows can be constantly displayed concurrently with typing at the command line, including the 4,000+ line context sensitive hypertext HELP tool.

One unique facility is the CRON program scheduler. Any number of programs can be scheduled to run at any minute, hour, day, or month.

If your machine is busy running an application, or even off when a CRON event is scheduled to run, it runs immediately after.

Captain Comic

(one disk)

Author: Michael A. Denio

Registration: \$10

Performance: 9/10

Ease Of Use: 8/10

Requires EGA

You are Captain Comic, galactic hero. Your mission is to recover three treasures from the planet Omsoc, which have been stolen away and hidden somewhere on the remote planet of Tambi.

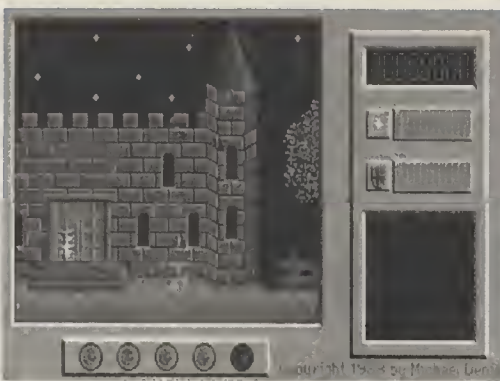
Your task will not be easy, you will need to gather tools to increase your fighting and defensive capability, navigate dangerous terrain, and avoid or destroy a hoard of deadly creatures. It will take all of the Captain's skill and wit to see the treasures returned to Omsoc.

The Captain Comic character displayed on the screen is controlled from the keyboard using the cursor control keys. The Space Bar makes him jump and, once he has collected his first can of BLASTOLA COLA the Insert key makes him fire.

When COMIC has possession of the DOOR KEY, this key is used to open doors. To open a door and pass through, position COMIC in front of the door and press Alt. The door will slide open and COMIC will disappear, finding himself elsewhere.

When COMIC has possession of the WAND, this key is used to teleport to another place on the screen. Press Caps Lock and COMIC disappears in a cloud of smoke, and re-appears in a new place on the screen. The teleportation is not random, and when used properly, can allow COMIC to reach places on the screen that are normally inaccessible.

COMIC starts the game with 5 lives, and no objects in his inventory. The game will end after COMIC retrieves all three treasures or when all spare lives are exhausted. The treasures include rare gems, a sack of rare coins and a jewelled crown.



There have been many games based on the original Breakout theme where you have to bounce a ball at a wall using a simple paddle, chipping away at the bricks till you get to the other side but none is in the same class as Moraff's Superblast.

This one has so many new features that it brings a whole new life to the theme. The action is fast but not so fast that the game is unplayable (and it can be adjusted) but interest is sustained by the fact that each time a screen is completed a totally new and very different one comes up.

The variety of objects is also quite wide, some break up, some explode into a myriad of more balls, some bounce off, some make your paddle bigger, others make it smaller, others are one-way only.

The program has been cleverly designed to work on all types of monitors and adjusts the resolution and graphics accordingly. This is the sort of game you shouldn't start late at night or you'll be going to bed in the small hours!

CHILDREN'S GAMES

Pallanda

(one disk)

Author: ShareGames

Registration: \$15

Performance: 7/10

Ease of Use: 8/10

Requires EGA or VGA.

Mouse recommended.

This is a fun game for youngsters aged between five and 10 but it offers enough strategy and luck to make it challenging for Mum and Dad too.

Prince Pallanda can be included as one of the four players. The name, Pallanda, comes from 'Pal Land' where everyone plays happily together and King Pallanda makes sure everyone plays fair.

The object of the game is to land on the gold circle in the centre by moving to the closest colour shown on the spinner. There are hidden surprises everywhere along the way with pictures you can watch being drawn. It sounds simple. However, the nearest matching colour is often in the wrong direction!

Pallanda is designed so even youngsters that aren't reading yet can learn to play well.

Finding the closest colour enhances counting skills. Learning the easy way.

ARCADE GAMES

Moraff's Superblast

(one disk)

Author: Moraffware

Registration: £35 for

complete set of games

Performance: 8/10

Ease of Use: 9/10

Arctic Explorer

(one disk)

Author: Apogee Software

Registration: £29.95

Performance: 9/10

Ease of Use: 9/10

This is the second exciting adventure of Nevada Smith. Nevada wasn't satisfied with finding the elusive pharaoh's tomb in his first adventure. After months of searching and studying ancient maps, Nevada has stumbled upon the location of a tremendous Viking treasure cave. Join our intrepid hero as he heads for the Arctic in this stunning and chilling new adventure series!

Arctic Adventure contains 80 all-new diabolical levels, packed with mind bending, puzzling arcade action designed to keep you from ever succeeding. Nevada will face freezing waters, diabolical traps, slippery ice patches, falling stalactites, runaway snowballs and even abominable snowmen!

There are many, many more obstacles for Nevada to overcome in this highly adventurous series. You will start on a vast arctic "world" map and must find your way around the hazardous ice caves. You are searching for the remaining fragments of a map that will eventually lead you to the location of the hidden treasure cave. Gather pick axes to break walls and bullets to shoot dangerous enemies, or find the boat to cross the freezing waters to unknown caves. Throughout your adventure you'll also find many bonus items to increase your wealth (and score). It's up to you to learn the use of any object you discover, and whether it should be altogether avoided. This game uses the FAST (Fluid Animation Software Technology) system which allows for flicker free movement even on the older IBM PCs.



Moraff's World

(one disk)

Author: Moraffware

Registration: £31.73

Performance: 8/10

Ease of Use: 9/10

Runs in all graphics modes

Moraff's World is the ultimate dungeon game. It contains 25 level deep dungeons with brick walls, wooden doors and monsters with fangs and claws. See monsters far off in the distance down the best 3D corridors ever seen in a computer game. Moraff's World rivals the CAD programs! Fight many different types of monsters, cast over 100 different spells, much more.

This game puts commercial computer games to shame! Moraff's world contains built-in intelligent help that realises when you are confused and makes suggestions appropriately. All commands are one-key, no typing of words or sentences. And now, all commands can be accessed with the mouse as well! Just point to things on screen and press a button!

It's even easier than Windows. Just imagine that you are exploring the 24th level hunting down the Shadow Dragon King. Little mice and birds keep telling you which way to go, but you just can't seem to find it. Your task is not made easier by the trolls and giant black scorpions that keep chasing you down the corridors. Finally, you discover a secret door that you are sure is hiding the dragon king. You cast a power weapon III spell and a super strength, and then you blast through the door! The door opens and behind the door there is a ... to be continued ...

Moraff's Stones (one disk)

Author: Moraffware
Registration: £22.32
Performance: 7/10
Ease of Use: 9/10
Runs in all graphics modes

This game was inspired by Moraff's World. Stones is a classy gambling game played against monsters. The monsters start off pretty simple-minded and easy to beat, and even relatively friendly. But each time a monster goes broke and can't buy into the next hand, it gets replaced by a more cut-throat species of monster.

Eventually, the user finds himself surrounded by backstabbing, hard-core gamblers at the highest levels of the game. Special hint: take your limbs with you when you

leave. This game has a wide appeal ranging from teenagers to old-time card players who enjoy playing a card-like game in the pleasant company of nice congenial monsters. Stones supports Hercules, CGA, EGA, VGA and Super-VGA (16 or 256 colours) all in their highest resolutions. Full mouse support

Willy the Worm (one disk)

Author: Alan Farmer
Registration: £10
Performance: 7/10
Ease of Use: 9/10
Requires CGA

Willy the Worm is a fast, challenging arcade style game in the classic ladders and platforms genre. What makes this particular version interesting is the ability to design your own screens and introduce a wide variety of challenges which can be as hard as you like or deliberately simple so as not to discourage young players (or perhaps so as not to discourage the older ones?) The object of the game is to reach the bell without being squashed by a cannonball or running out of time.

Extra points may be earned by getting presents along the way and by jumping over the balls. After you reach the bell, you will be awarded points for the remaining time and you will advance to the next screen. The game is played with the four arrow keys to make Willy the Worm run left and right and climb ladders up and down, and the spacebar to make him jump. Note that when jumping, Willy can change directions in mid-air. This can be extremely useful! Any other key makes him stop.

If you find this game too hard (or too easy), read the EDWILLY.DOC file and use the screen editor to make it suit your fancy. You can also use the editor to get a preview and practice on the higher levels.

HI RES ARCADE GAMES

Quatris Pro (one disk)

Author: Eugene Ignatius Kim
Registration: \$10
Performance: 7/10
Ease of Use: 9/10
Requires An EGA/VGA card

This is an extensive and compulsive version of the now legendary game Tetris, designed specially for PC's with EGA or VGA graphics.

You may either move your mouse or use your cursor pad to select a choice in the menu and then play the game. A robot instructs you what to do.

For those of you who are unfamiliar with the rules of the game:-

You see four sets of blocks in the top of the window at the beginning of the game. These blocks will slowly fall to the bottom. You can rotate these blocks by pressing Enter. You can also move them Right, Left, and Down by using the cursor pad. However, you can not move them upwards. You can move and rotate the blocks so that you will have no space in between each blocks when they fall to the floor.

The main purpose of this game is to completely fill in one or more rows with these blocks. When you do so the filled line will be removed by the computer giving you more space to fill up. The more times you do this, the higher your score. If you make mistakes and leave "holes" the blocks will fill up to the top of the screen and the game will stop.

Wolfenstein-3D (one disk - 3.5" only)

Author: Apogee
Registration: £32.95
Performance: 10/10
Ease of Use: 9/10
Requires EGA or VGA and hard disk

This is very first ever "texture-mapped" three dimensional (3D) game with real-time scrolling and panning! Most 3D games use the polygon fill method, such as all the flight simulators available commercially. Wolfenstein 3D uses a 3D technology that has never been seen commercially. (The Wing Commander games tried to fake texture-mapped 3D graphics, but the results didn't work very well.

Wolfenstein 3D is simply a technology breakthrough! As an escaped prisoner in a German war camp, you will move smoothly through a 3D world full of amazing detail and animation. Unlike other 3D games, you'll move smoothly through an incredible and realistic 3D environment, with

intelligent moving guards and opponents. This is a high-action, often violent game. Use your rapid fire machine gun to mow down a line of enemies, or sneak up on a guard with your knife so you don't alert the other guards in the area. Can you escape alive and fulfil your mission? You really see into the rooms in a very realistic "virtual reality" view. The 3-D perspective rapidly updates to accommodate your change of view with an uncanny realism.

The only thing you notice is the slight digitisation of the images but once the game starts going this is no longer a problem. The action, although somewhat gory, is very good. A chilling menace pervades you as you investigate what is happening behind the sliding doors of the dungeons. It could be a nice plate of food or a box of ammo — or, if you're not prepared, a loaded gun pointing at you. So, top marks for what is at present a unique feature on a PC-based game — and the great thing is it is released as shareware.

NB Parental warning: Wolfenstein 3D features realistic graphics and action. Parental approval is recommended for younger players.

SKILL AND STRATEGY

Sherlock (one disk)

Author: Everett Kaser
Registration: \$15
Performance: 8/10
Ease of Use: 8/10
Requires EGA or VGA
Mouse optional

Sherlock is a game of deduction. It is your task, based upon the information available in provided clues, to determine the locations of 36 blocks. Every puzzle can be solved by using the clues to eliminate possibilities until the location of a specific block can be determined. Sherlock may be played by a single person, or a tournament may be set up, with each person in the tournament attempting to solve the same puzzle as quickly as possible.

A time limit may be set if desired. This game is based upon a puzzle I remember from my high school days. In that puzzle, you were told that there were six different coloured houses side-by-side, in a row. A

person lived in each house, and each person had a different pet, drank a different drink, drove a different car, etc. Then you were given a list of clues, such as: "The person who drinks orange juice lives next to the red house."

From the list of clues, you had to decide which things went where. Sherlock implements basically the same thing, but done in a graphical environment where you use the mouse to organise the clues, keep track of possibilities and impossibilities, and mark the deduced locations of objects. There are 65,536 different puzzles, enough to keep you occupied well into the next century.

Tag The Assassination Game

(one disk)

Author: David Wharfe

Registration: £10

Performance: 8/10

Ease Of Use: 8/10

Tag is a multi-player strategy game with graphics which works with any PC compatible with at least Hercules card — versions are supplied on the disc for different CGA and EGA too.

The object of the game is to track down and totally obliterate any other players you find in the TAG maze before they find and obliterate you. To help you do this you will have at your disposal an evil assortment of tortuous weapons and other items. You also have the ability to become invisible. You choose your weapons and armour then select a maze from the 65,000 permutations available.

Players are supplied with a general information window which shows your state of strength, agility, contamination, weaponry etc. Going invisible can be a bit tricky as your on-screen marker stays in the position at which you opted for invisible. If you can't find yourself, you will have to briefly become visible again.

Army Manoeuvres

(one disk)

Author: Dwain

Goforth

Registration: \$20

Performance: 8/10

Ease Of Use: 7/10

Requires VGA and a mouse and 286 or better

Arrmy Manoeuvres is an interesting blend of Risk and Chess with the added bonus of colourful animated graphics. The object of the game is to defeat the opposing captain while protecting your captain from attack ("capture the flag".) There are four kinds of pieces, a board with various kinds of terrain and two rafts which can cross the lake.

The fundamental gameplay is based on determination of a game strategy then acting out attack and defence using rolls of the (computer) dice to determine the outcome. The game does, however, have a lot of rules — which the computer sees to it are enforced. These rules make the way the game plays out far more interesting and realistic.

Each piece, ranging from Captain, through Artillery, Cavalry through to Infantry starts has its own unique characteristics and game rules. These are fully described in the accompanying documentation.

The natural features also play a part, water, walls, rafts etc. Army is fun for one player and even better for two. Highly recommended.

GRAPHICS ADVENTURES

Hugo II WhoDunnit?

(one disk)

Author: David P. Gray

Registration: \$20.00

Performance: 9/10

Ease Of Use: 9/10

Requires EGA and Hard Disk

It's adventure time again as Hugo and Penelope get swept up in another superbly animated 3D EGA extravaganza! This time a murder mystery is afoot with a couple of fiendish twists and a large helping of humour along the way.

Just look what's in store; a revolving bookcase, a saucy French maid, and a murderer!! Hugo II, Whodunnit? follows the same look and feel of Hugo's House Of Horrors but with many more screens and characters.

If you enjoyed the original Hugo adventure, Hugo II is a real treat in store for you!

Use simple English to instruct Hugo to perform an action. For example "look around" or "look at door" to look at things.

To pick something up, try "pick up the gun" or "get gun" or "take gun" etc. Many synonyms are allowed but if Hugo doesn't

seem to understand, try re-phrasing your command.

Kingdom of Kroz II

(one disk)

Author: Apogee

Software

Productions

Registration: £9.95

Performance: 8/10

Ease of Use: 9/10

Kingdom of Kroz II uses high-speed 16-colour text-based graphics and therefore works on all machines.

It features a tremendous sound effects library. This shareware game is the first in a series totalling seven different games.

The author has adopted an unusual and effective method of registration. Instead of asking for payment for this, the first game in the series, he asks satisfied users to pay for the subsequent games in the series.

You must navigate through dangerous chambers, solving puzzles and avoiding pitfalls. Collect gems, whips, chests, nuggets, tablets, keys and scrolls to aid your progress. This game is as much strategic as it is pure arcade fun.

ZZT

(one disk)

Wibling Wilf & the Dunjox

(one disk)

Author: Various

Registration: Various

Performance: 8/10

Ease of Use: 9/10

Requires CGA

Wilf is in a spot of trouble. Can you guide wibbling Wilf around the maze madness? His only hope of survival is to fill in the mazes flung at him by the evil jelly-like glumphs. Wilf fills in the mazes with jam. Boy! Does this make the glumphs angry!!

So angry in fact that occasionally the glumphs unleash their deadly weapon. Codenamed "Frank" the glumphs' secret weapon is cunningly disguised as a boiled sweet. But do not be fooled by this.. it will do its level best to eat up your jam. Frank is indestructible, but the glumphs can be zapped by firing pompoms at them. Watch out though, because they quickly come back! Sound Blaster music card. Yes! This program features amazing digitised sound effects. Sorry, but you'll only be able to hear them if you own a Sound Blaster-compatible music card.

Dunjox is a side-view action game challenging you to shoot and jump/levitate your way through massive underground labyrinths filled with hazardous traps and relentless creatures. Full-screen tile graphics are used to simulate the dungeons about you.

As an intrepid astral explorer you have discovered many uncharted solar systems and their respective planets. On your latest starship-propelled expedition you have found a previously unknown planetoid with a liveable atmosphere, a rarity of outstanding proportions. However, in attempting to touch down on its surface mechanical problems have caused you to crash land on a muddy mountain basin, your ship nearly meeting destruction.

This games compendium disk also includes Bit-Bat, Droid, Robotron and Leaper.



Author: Tim Sweeney
& Allen Pilgrim
Registration: £5
Performance: 8/10
Ease Of Use: 8/10

To complete the Town of ZTZ, you must master 43 game boards filled with creatures and ingenious puzzles. The game is very challenging and requires a good amount of brain power as well as fast reflexes.

ZTZ includes a game editor so you can create your own game worlds using a set of ready made objects. You can also write small programs to control objects using the built in ZTZ-OOP programming language.

When you discover a new object, try touching it. Nearly everything has some sort of purpose (but watch out for red herrings!)

You can expect to play ZTZ a total of about 20 hours before you finish the game. It is well worth the effort and you can always take your journey one step at a time.

ZTZ requires a PC compatible computer with at least 512k RAM and any graphics adapter with a colour or monochrome screen. Keyboard, Joystick and Mouse operation are fully supported.

Super ZTZ
(one disk)
Author: Tim Sweeney
& Allen Pilgrim
Registration: £5
Performance: 9/10
Ease Of Use: 8/10

This is a great sequel to the popular Town Of ZTZ game. Journey through the giant seven-level Monster Zoo, shooting monsters and solving puzzles every step of the way!

This game boasts an ultra-colourful four-way scrolling playfield and offers hints at the press of a button, plus all of the diabolical tricks that made the original ZTZ worthwhile.

Super ZTZ is a graphics adventure style game similar in style to the famous Kroz series but with a more active playing field and plenty of taxing puzzles.

CLASSIC ADVENTURES
Cliff Diver
(one disk)

Author: Patrick Farley

Registration: \$10
Performance: 8/10
Ease Of Use: 8/10

This is the author's first attempt at computerised interactive fiction; an adventure novel entitled, Crime to the Ninth Power. In this game, you'll be introduced to a character named Cliff Diver; a private investigator living and working in San Francisco.

Knowing your way around would certainly be an advantage in playing the game. Cliff may talk about something down by the waterfront, and you may remember driving along the waterfront. But as to going there and trying to find the building Cliff mentioned, I don't think you'll have a lot of luck.

The game is quite challenging but is interspersed with Infocom-style humour which makes it entertaining too.

For those of you who get stuck easily and hate wasting hours figuring over a problem, the author has very sensibly produced a companion "Hints" disk which is also available as shareware.

AMUSEMENTS & DIVERSIONS

Solitaire
(one disk)
Author: Edward Kaser
Registration: \$15
Performance: 8/10
Ease Of Use: 9/10
Requires EGA or VGA

Solitaire is a game of solitaire, played with "tiles". It derives from several similar games, such as "Shanghai", "Gunshy", and "Mahjongg", which are played with Mah-Jong tiles. Solitaire plays the same game, but adds new starting layouts and the ability for the player to create new layouts and/or modify the layouts provided. It also uses new "westernised" pictures on the faces of the tiles. Best with mouse, but works well from keyboard, too.

Nimonik
(one disk)
Author: Zoran Sevarlic
Registration: \$39.95
Performance: 7/10
Ease Of Use: 8/10

If you've ever had to study a foreign language or

memorise a lot of words, terms, phrases, facts, acronyms, formulas, or dates you've probably had to do it the hard way.

First, you had to make up scores of index cards. Then you had to spend hours shuffling, sorting, grouping, and spreading them all over your study until you were lost in confusion. You've probably enlisted unwilling friends to flash the cards at you or test you until you became friendless. Wouldn't it be nice if there was a better way to memorise? Well, now there is with Nimonik. Nimonik is a complete, computerised learning environment designed to help adults learn and memorise almost any subject.

Nimonik is not a game or a children's educational program. It's fast, efficient, and easy to use; everything is menu-driven. It helps you organise and manage your learning too: you can print, edit, add, copy, merge, etc.

Multiple users can study multiple subjects, eg, English, French, Spanish, German, Italian, Latin, physiology, microbiology, botany, zoology, philosophy, history, bible study, computer terminology, economics, social studies, sociology, psychology, geography, geology, political science, law, real estate, corporate policy, accounting, business, insurance, management, finance, marketing, and any subject where you have to learn or memorise terms, words, ideas, concepts, names, places, or dates.

GRAPHICS ADVENTURE GAMES

Vampyr: the Talisman of Invocation
(two disks)
Author: Victor H Shao
Registration: \$10
Performance: 8/10
Ease Of Use: 8/10

The Talisman of Invocation is an adventure game set in the world of Quilnor. Here, the monsters are very nasty, the merchants very stingy, and the citizens are just a bit crazy. You, as an adventurer, must travel throughout this world to save all these creatures from a certain destruction. It might appear to be a typical task on

the surface, but be assured, it's not an easy one.

The programmers of Vampyr, Victor Shao and Brian Weston, are your everyday typical high school seniors from West Springfield High School in the lovely state of Virginia. Well, perhaps not all that typical. Brian is a night-owl who goes to sleep at five in the morning and wakes up at two in the afternoon.

Victor, on the other hand, gets straight As, goes to math team meets, and is a computer fanatic who knows his PC inside out. Despite all that, these two nuts do have one thing in common: they hate programming.

Nevertheless, they utilised their ingenuity and wrote Vampyr together. It took them and a couple of other helpers exactly two months to finish this project. When it was all done, they both went to sleep for eight hours to celebrate.

Mummy's Busy (one disk)

Author: Various
Registration: Various
Performance: 9/10
Ease Of Use: 9/10

The title sums up the thinking behind this collection of games for young children (suggested age range 4-10)

Cards is based on the popular TV program called Play Your Cards Right. You have to guess whether the next hidden card is going to be higher or lower than the one on display. Points are awarded for successful answers.

Memory is a game of Concentration or Pelmanism. A deck of 54 cards is laid out face down. You try to match the cards. If the two cards match you receive two points and they will be removed. The cards are animals and there are four of each, with the exception of hyena, of which there are only two. Matching the hyena cards will give you four extra points. Be careful: if you match cat and mouse or hawk and dove you will lose two points — they hate each other. But, on a one-time basis, if you match dog and horse or lion and tiger you will get a bonus of two points — they love each other.

War is played on a board which has 12 compartments arranged in two rows of six (the

arrangement is similar to that of an egg carton). The numbers of the side represent the quantity of the computer's 'counters', and the numbers on the lower represent the 'counters' on the player's side. A movement consists of taking all the counters from one compartments on your side and distributing, one counter into each of the adjacent compartments in a counterclockwise direction.

You score points by capturing counters. A capture occurs when you sow your last counter in an opponent's compartment which previously contained either one or two counters. The counters from that compartment are then removed from play.

The game can end in several different ways. Play must end however when the board is empty and all the counters have been captured or whenever one player has captured more than half of the counters. Wari also permits a stalemate, where each player chases the other around the board fruitlessly.

Numgame is a counting game for 5 year olds. It asks the child to count up the faces on the screen and type the number. Remind them to press the Enter key after entering the number.

Finally, Battle is a straightforward shoot 'em up game for under seven's.

STOCKS AND SHARES

Noyes Investment Ledger (one disk)

Author: James Noyes
Registration: £18 UK
Performance: 7/10
Ease of Use: 7/10

The author has produced an investment program which is fairly easy to use. It is assumed that you have been using manual records so far and know a little about book keeping.

Data is entered on to a main input form on the screen. Once you have mastered this part of the program, the various reports will keep a good control over your investment portfolio.

The author is an accountant who has spent many years sorting out manual and computerised accounting problems and is therefore well suited to creating a program which is appropriate to the task without

confusing the user with jargon and complex setting up procedures. The Investment Ledger features analyses of purchase and sales of investments, calculates the profit and losses and analyses cash payments and receipts.

There is also a bank reconciliation facility, memorandum database, and several reporting functions. It can handle up to 99 cash/bank accounts, 999 nominal ledger headings and a maximum value of posting currency of £100 million which should prove more than enough for most investors!

HOBBIES & PASTIMES

Coin Collector (one disk)

Author: Trevor Dumbleton
Registration: \$12.95
Performance: 8/10
Ease of Use: 8/10

There are many database management systems on the market but they all require a degree of computer knowledge and database design to tailor them to a particular application. Quite often, the average hobbyist does not have the time or inclination to fiddle about like this.

Fortunately, shareware authors have come to the rescue with a variety of database systems tailored to specific applications. This one is designed for the coin collector. It is simple to use and offers a wide range of features. You can log details of country, currency, denomination, year, value and condition, etc.

A Notes field is provided for other comments. Search or print collection by country, currency, value, year, reign, purchase date, denomination or condition. On line, context sensitive help available. Minimum requirement: 512K, single floppy. Hard disk recommended. File size limited only by disk space.

Stamp Collector (one disk)

Author: Trevor Dumbleton
Registration: \$12.50
Performance: 8/10
Ease of Use: 8/10

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degree of computer knowledge and database design to tailor them to a particular application. Quite often, the average hobbyist does not have the time or inclination to fiddle about like this.

Shareware authors have come to the rescue with a variety of database systems tailored to specific applications. This one is for stamp collectors. It is simple to use and offers a wide range of features. You can log details of country, date, face value, currency, value and condition, etc. A notes field is provided for other comments. Search or print collection by country, currency, value, year, issue, purchase date or condition. On line, context sensitive help available. Shareware. Minimum requirement: 512K, single floppy. Hard disk recommended. File size limited only by disk space.

ASTRONOMY

The Night Sky (four disks)

Author: A C Stevely
Registration: £24.95
Performance: 8/10
Ease of Use: 8/10

The Night Sky is a computer planetarium capable of plotting depending on your disk system, either 24,000 stars to magnitude +7.49, or 45,000 stars to magnitude +8.49.

It is a very easy to use menu-driven program. This program was written by an amateur astronomer who, when he is not looking at the stars, drives a London Transport bus!

He has spent many hours working on The Night Sky, which was originally started as an exercise in programming. Only when it was almost finished did the author think of distributing it as a shareware program by which time it had expanded to four disks.

Users can select from 28 different locations worldwide. If your city is not on the list then you will have to look up the altitude and longitude of your city in an atlas.

For anyone interested in the subject and for serious astronomers this program is a must. Best used on a hard disk.

EXPLORING

Exploring Physics (one disk)

Author: Bruce N. Baker
Registration: \$20
Performance: 8/10
Ease of Use: 9/10

Exploring Physics comprises a suite of programs for secondary school students and covers:

- Classical Physics Menu
- Traditional physics formulas
- Relativity Physics Menu
- Formulas for velocities approaching the speed of light
- Electrostatics/Dynamics Menu
- Formulas involved electricity
- Optics Menu
- Formulas dealing with the study of light
- Math Menu
- Process vector and quadratic equations
- Conversion/Calculator Menu
- Convert units and perform simple math
- Display Information Menu
- Formulas and equations displayed.

Each subject is split into a series of sub-categories. For example, Electrostatics and Dynamics covers a) Coulombs Law. b) Electric Field and Voltage Potential by a single particle. c) Series Capacitors. d) Parallel Inductors. e) Parallel Resistors. f) Inductance Defined. g) Parallel Plate Capacitance.

The subjects are handled well and this disc comes highly recommended

Exploring Chemistry

Author: David W. Ostler
Registration: \$29.95
Performance: 7/10
Ease of Use: 7/10

This disk features two programs designed to aid secondary school chemistry students.

The first is Elements which presents the periodic table on the screen giving information about Atomic Numbers and Atomic Weights along with the standard symbol for each element.

The Periodic Table appears to be fairly up to date and it features elements that have not even been named yet. It can also be printed out.

The information and periodic table can be presented on any type of monitor screen and graphics card but, as with most programs, is clearer and better-presented on EGA or VGA.

The second is Molecule which is an interesting introduction to molecular structure, illustrating the subject graphically.

Exploring Maths

(one disk)

Authors: Various
Registration: Various
Performance: 8/10
Ease of Use: 8/10

This suite of programs, an upgraded version of a popular title, is ideally suited as a tutorial and revision aid for secondary school maths students. By using a PC-presentation they make the subject easier to understand and absorb.

Topics covered are Algebra, Fractions, Areas and Volumes.

Problem solving exercises are presented by the program and these may be amended by the parent or teacher. Answers are checked for accuracy and scored.

FILE AND DISK MANAGEMENT

DOS Toolbox

(two disks)

Author: Computer Tyme
Performance: 7/10
Ease of Use: 7/10

The Computer Tyme DOS ToolBox contains powerful and simple to use utilities. Some of the programs are written for beginners, others for intermediate and advanced users. The Computer Tyme DOS ToolBox programs come with help screens and on-line documentation which give quick proficiency with each program. The toolbox was originally written in 1985 to provide the same functions for MS-DOS as a program called Sweep did for CP/M. The main function of this program is to be able to select files from a list of files, then either copy them, move them, or delete them. Thus the design of this program is such to make these functions as easy as possible.

The files are displayed in a vertical list. The up and down

arrows, page up, page down, home and end keys move you through the list. The 'G' (GOTO) command is provided to help you get to a desired place in the list quickly. Files are selected (marked) using the right arrow key, and unselected (unmarked) using the left arrow key. All files can be marked using Ctrl-Right Arrow and unmarked using the Ctrl-Left Arrow. A wild card mark is provided to mark all files that match a particular mask. When files are marked they are simultaneously highlighted for action.

For anyone with a lot of 'housekeeping' to do on the mass of anonymous files which have accrued on hard and floppy disks (and who hasn't?) this is a very useful tool which lets you get things sorted out efficiently.

Maxiform

(one disk)

Author: Herne Data Systems Ltd
Registration: \$10
Performance: 9/10
Ease of Use: 9/10

Are you tired of running out of space on your floppy disks? How would you like to fit 420k on a 360k disk, 800k on a 720k disk, 1.4 meg on a 1.2 meg disk, or an incredible 1.6 meg on a 1.44 meg disk?

Sound impossible? Well not any more. If you are using DOS version 3.2x or later, then this innovative new shareware program from Herne Data Systems is just the thing for you. Using Maxi Form for all your floppy disk data storage needs is like getting an extra one and a half disks free with every box of floppies that you buy.

In most cases, no special software driver programs are required to access these disks from DOS. However, in cases where reliable standalone operation cannot be achieved (it is a complex function of ROM BIOS details, DOS version and disk controller characteristics), the simple device driver SMAX.COM can be used to patch the BIOS code and provide resident support.

To use Maxi Form you will need a 100% IBM compatible computer (PC, XT, AT, PS/2, Convertible, etc) with at least one 360K 5.25", 1.2 meg 5.25", 720K 3.5" or 1.44 meg 3.5" floppy drive. The 1.44 meg drive can be used to format 800K 3.5"

disks; and the 1.2 meg drive can also be used to format 420K disks or 800K 5.25" disks. Note that with many BIOSes, you will need to use the TSR driver program SMAX.COM supplied with Maxi Form to read and write MAXI-style disks (especially 800K, 5.25" disks).

Integrity Master

(two disks)

Author: Wolfgang Stiller
Registration: \$35
Performance: 8/10
Ease of Use: 8/10

Integrity Master combines several useful disk management and file recovery functions with powerful virus detection and elimination. It claims to recognize known viruses by name and will describe their characteristics and then guide you through their removal.

It can detect not only existing viruses, but will detect as yet unknown viruses. This means that, unlike other programs, which you must constantly update to keep ahead of the current crop of viruses, Integrity Master needs no updating.

Integrity Master will detect any form of file or program corruption, not just that caused by viruses. This makes Integrity Master a useful tool to provide PC security, change management and hardware error detection. Why spend your time merely checking for viruses when you give your PC a complete check out with Integrity Master?

Integrity Master can reload system sectors on disks which are so badly damaged that DOS can no longer recognize them. It is useful as an aid to PC security. If someone changes, adds or deletes any of your files you will know. You can run your normal test programs to check if your disk drive is working OK. It will even detect if a disk error damaged some data yesterday.

Flexibak Plus

(one disk)

Author: Adrian Mardlin
Registration: £29.95
Performance: 8/10
Ease of Use: 8/10

Flexibak Plus is a flexible, easy to use hard disk back-up system that takes a logical, simple and unique approach to the back-up problem.

With a conventional back-up system, you are required to take a full back-up approximately once a week and do daily incremental back-ups which are placed on separate disks. Should you need to restore from the back-up, you must first restore the full back-up and then each of the incremental back-ups up to the last back-up taken.

With Flexibak Plus Plus, all this is different as the concept of full back-ups and incremental back-ups is removed. Instead, you only need to take a full back-up once and then all subsequent back-ups are placed on the same back-up disks, giving some long term speed increases, simpler file restoration and an improved back-up management capability.

USING THE COMPUTER

Getting Started on Computers

(one disk)

Author: Amir Pirouzan
Registration: \$15
Performance: 9/10
Ease of Use: 9/10

There are quite a few programs on the market which are intended to teach the computer. Many of them suffer from over-complication and do not allow sufficient 'space' for the totally new user to get to grips with the subject matter. Often they do not deal with the basic practical necessities of getting started.

Now, the author of Professor 3T has come up with a really practical first-step tutorial for PC users which does not make any presumptions about the user's existing knowledge, nor does it drone on and on about DOS commands.

The Professor 3T First Tutor teaches novices from scratch and covers practical topics starting with How To Switch On The Machine! Subjects covered include Sources of Misunderstanding, Computers

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Dear



The rights and wrongs of advertising, the ins and outs of PC programming, the ups and downs of golf games ... it's all here – even a reader on a quest for a game featuring hippos.

Legal, decent and honest?

Please could you give me some details on what rights companies have in advertising games.

I have seen many games advertised in many magazines when they aren't actually available yet! The worst company for this is Ocean, which has been advertising Robocop 3 as being available for the PC since November 1991. On ringing Ocean they say they have no release date as yet for the PC version. Is this allowed?

I feel strongly against this false advertising as companies are more than happy to take your hard-earned cash and make you wait for what you are entitled to.

Most games are advertised with the wording: "available on," or "released now on". But some companies – like Ocean – don't use this wording, they just print the name of the computers the game is available on. When a PC version is not planned, IBM PC is sometimes left out.

Can you tell me if they are breaking advertising laws?

Wayne Roberts
Gunnislake
Cornwall



Potentially there's a case for misrepresentation under the Sale of Goods Act if the prosecution can prove that the advertiser knew the product wouldn't

be available when the advertisement appeared, and the ad itself specifically states that it is. Not easy to prove.

However, advertising products which aren't available also contravenes the Advertising Standards Authority's code of conduct, although again, circumstances such as unforeseen delays are taken into account. The ASA is a self-regulatory body, not a statutory institution.

In the case of Robocop 3, Ocean pleads extraordinary circumstances. The game was begun on the PC, and was progressing smoothly, until another Ocean title, Epic, needed some urgent rewrites and knocked everything else off-schedule. Ocean normally produces generic advertisements for its games, because to produce format-specific ads for every title would be extremely expensive.

Cold comfort

I write with reference to Paul Boughton's review of North Polar Expedition in the June issue of PC Review.

Mr Boughton reviewed the software as if it were a computer game which it patently

is not. North Polar Expedition has been very successfully used in schools and I think that if he had tried playing it with a few people from the office, each taking a different role, he would have enjoyed the program much more.

The popularity of games like Trivial Pursuit has proved that people like answering questions in competition with each other and pitting their wits against each other. Not everyone is an expert on the Arctic and much can be learnt from this program simply by answering the questions, either correctly or incorrectly.

Laurence Scotford spent several hours with myself and Steve Clark earlier this month going through our future CD development plans. We hope that his findings will be included in a fairer article in a future issue of PC Review.

Catherine Spratt
New Media Administrator
Virgin Games



Throughout the review of North Polar Expedition it was made abundantly clear that this was not a 'normal' computer entertainment aimed at the lone gamer,

but an educational product which could be of interest to teachers wanting to stimulate class discussions. Undeniably not everyone is an expert on the Arctic, and North Polar Expedition could well provide an insight into the region. But at a cost of nearly £100, surely it was completely fair to voice criticisms of sound and graphics and to urge anyone – teachers included – to see it running before parting with their money.

Tricky switches on the Amstrad

I own an Amstrad PC 1640 with 640K RAM and CGA graphics. I have had it a very long time and have never really been

Programmers' knowledge

Having programmed both the Amiga and PC computers, I was concerned about the remarks made by Adam Moss in your May '92 issue. After reading the letter, I was left with the impression that Adam does not fully understand the hardware specification of the Amiga computer, or indeed his Amstrad PC.

Although the blitter is indeed very efficient at moving blocks of arbitrary data around ("sprite device"), due to its pipeline architecture, it is also capable of a lot more. When in "Line Draw" mode the blitter can in fact reproduce solid and patterned lines at a very fast rate, which can of course be used to create the vector polygons required for games such as flight simulators.

Once drawn, the polygons can then be filled with the desired pattern by using the blitter in "Area Fill" mode. It is therefore fair to say that the blitter is a very useful tool where the programming of flight sims and arcade games are concerned.

Even if this was not the case, the Amiga has a MC68000 as its main processor unlike Adam's Amstrad which incorporates an Intel 8086. Although both processors operate on approximately the same clock speed, the MC68000 is capable of internally processing 32-bits at a time, whereas the 8086 can only manage 16-bits.

I would also like to correct a common misconception which is often associated with the Amiga architecture, which is that the blitter is a chip in its own right. In fact, the blitter is a single function of a multi-function chip, called the "Agnus", which is responsible for many other tasks within the Amiga (ie, screen co-processor, DMA-control, multiplexing).

With these points in mind, it is however fair to say that most modern PC systems, especially the 386 and 486 machines, are more than capable of handling vector based flight simulators at very respectable speeds. However, this speed is rarely realised because most of the software written by PC programmers do not really take full advantage of the hardware available to them.

The reason for this is not due to an insufficient knowledge of the system by the programmer, as suggested by Adam. Unlike Amiga programmers, the PC programmer does not have a solid firmware/hardware base upon which to design. It should therefore be understandable when perfection is not always achieved.

Lee Westlake
Mid Glamorgan



satisfied with the graphics as I use it solely for games.

I then decided I would upgrade it to at least EGA but, when I realised how much it would cost, I realised I would never have enough money to do it.

I then turned to my computer manual and while looking through I found that if you had an EGA monitor you should set some certain switches positioned at the back of the CPU to a certain combination (shown below). It also said these switches will have been factory set so you wouldn't need to alter them unless you bought a new monitor. Even though I hadn't got a new monitor I decided to change them anyway and – surprise, surprise – up come my games in EGA.

Why then can Amstrad go on to charge more for some of their PCs with an EGA monitor than one with a CGA monitor which has equally good graphics?

If anyone is interested in changing the graphics mode on their Amstrad, the switches are located on the bottom left of the back of the CPU. They are very small and there are 10 of them. The order in the should be set is:

- 1 – Down
- 2 – Down
- 3 – Down
- 4 – Up
- 5 – Up
- 6 – Down
- 7 – Down
- 8 – Down
- 9 – Up
- 10 – Up

This shouldn't damage your computer, or at least it hasn't damaged mine for the past year.

Please note this will not work on the 1512 series.

John Royle
Bury
Lancashire



As far as we understand, this isn't meant to happen. Our Amstrad expert suggests that it is possible a) that you have had an EGA monitor all along, but

hadn't realised, which seems highly unlikely, or, b) that the EGA you are now running on the machine is the EGA mode on the CGA version of the 1640. This EGA mode will be recognised and used by some games, but it has a resolution of 640 x 200 as opposed to the more often-used 640 x 350. Both modes use 16 colours, but obviously the resolution isn't as good in 640 x 200.

Sound and fury

Why are you so negative to the Roland LAPC-1? Admittedly, you correctly say that the Roland is the best board on the market, but the way you have put it across at times makes it sound like only one or two games support it. Not so!

Listen, PCR readers, getting the LAPC-1 is

the best move you can make. The 'new generation' of sound cards such as the Sound Blaster Pro, can just about equal it and no more., although it can perform samples.

Incidentally, if you shop around, you can buy both an LAPC-1 and Sound Blaster for the supposed retail price of the Roland – and speakers, too!

I have a solution to the hardware requirement problem. Why don't the leading game programmers get together with the likes of Orchid and make a blistering graphics standard designed for games. The specs are obvious: 65000 hi-res (1024 x 768 minimum) flicker-free colour graphics, video cache memory, two inbuilt video processors, allowing billions of massive hardware sprites, ultra-smooth scrolling and powerful polygon-generation with no loss of speed, along with instant background drawing and manipulation capabilities, leaving consoles in the shade.

The monitor should be pretty special too, with some real narrow dot-pitch, low radiation and flicker-free refresh state. Just imaging the implications of such a set-up. Processor-heavy stuff such as Origin's, normally requiring upwards of a 386, would run brilliantly on a 286, perhaps OK on an XT, and of a much better visual richness than VGA can ever hope to be.

All you have to do, softcos, is get together with your best programmers and artists, design the best standard, and tell the leading video manufacturers that they will support the format to the hilt if they make it. Why not? This means you can let the not-inconsiderable base of 286 and possibly XT owners join the party.

Of course, such a card and monitor would be expensive, but it would fall quickly. As you have said, there seems to be no rival to VGA at the moment. I therefore feel the games industry can, could and should, take the initiative.

Jamie McLean
Cowcaddens
Glasgow

Scroll on

In the past couple of issues we've had letters comparing the sound capabilities of the Amiga and PC. As a new PC owner (three months) who has upgraded from the Amiga, I find this infantile and irritating. I owned my Amiga for two years and in general terms was most happy with the machine's capabilities.

The PC I own is a 386SX 25 with VGA graphics and a 50Mb hard drive and Ad Lib compatible soundboard. I have to admit that with my current set-up the sound produced is probably slightly inferior to that produced by the Amiga. However, the slight reduction in sound quality and clarity is more than made up for by the superior speed, graphics and hard disk on my PC. The lack of affordable hard disks for the Amiga was one of my main reasons for upgrading. On the other hand I have yet to see a PC game with the silky smooth parallax scrolling of the Amiga.

This doesn't mean the Amiga is a superior machine to the PC. It just means the two machines were designed with different philosophies in mind.

The Amiga was originally designed by Jay Miner for Atari as a games console and subsequently bought and marketed by Commodore as a home computer. Things such as hardware sprites and scrolling were designed with a view to arcade-type games. The PC, on the other hand, is a business machine first and foremost. It is only in the past two or three years and the advent of 256 colour graphics that the PC has started coming into its own in this respect.

The point I am trying to make is that it does not matter if the Amiga has superior sound quality or better scrolling capabilities. Both machines have their good points and their bad points. I chose the PC because of the hard drive and the wealth of RPG and simulations available on that machine. Stop worrying about what other people say or think and just enjoy what you have – a great computer.

David Clark
Burnfield
Newcastle-upon-Tyne

Cheap Monkey

For a long time I have wanted to get the secret of Monkey Island 2, but it was too expensive!

Looking through your buyers guide section I found a company called Software City, looking through it I found Monkey Island 2 for only £24.99!

I thought this was a bit funny, so I would like to know if this is correct.

Tristan Mackay
Tiverton
Devon



Funny, but perfectly plausible. You'll frequently find games advertised in PC Review by mail order companies for less than they cost in the shops. The

drawback of buying this way is that you have to wait for the game to be posted to you, and you won't be able to see any product demos or anything before you decide what to buy. You pay your money, etc., etc.

Another Monkey?

I would like to congratulate Lucasfilm for its absolutely brilliant game Secret of Monkey Island 2, which I have recently bought. The quality of the graphics, animation, sound (even on an internal speaker) and gameplay is first rate: Lucasfilm has produced a game which almost rivals Sierra's KQ5, although Lucasfilm could improve by making the length of the introductions longer.

Will there be a Monkey Island 3 and when is Indiana Jones and the Fate of Atlantis (Adventure) going to be released? Does Lucasfilm intend to release the sound

track for Monkey Island 2 on CD?

Has all prospective support for the Ad Lib Gold sound card been withdrawn, because I know of several companies that were planning to support it?

Christopher McClan
Leatherhead
Surrey



There are no firm plans or schedules for a Monkey Island 3 at present, but it seems pretty likely to materialise at some stage. The Indiana Jones

adventure should be out when you read this, and the CD soundtrack is a nice idea, but again, there are no firm plans to do so. As for Ad Lib Gold support, companies are currently holding their fire until Ad Lib's future is assured.

Above par

For the past year I have been playing PGA Tour Golf, and was fairly impressed by its ease of use and playability. I have recently, however, obtained a copy of Leaderboard, and was extremely impressed by the digitised speech produced by the system, known as Real Sound, perfected by Access Software. Even on my puny PC speaker, it was crystal clear and a joy to listen to. I am now, therefore, considering investing in a golf simulation that is not only playable, but also looks good, and has more special features and novelties to keep me interested. I have seen your preview of Microprose Golf, and have read the PC Leisure review of Links, also by Access Software. I was, however, very disheartened to see that it will only run on an IBM PS1, PS2, AT or better. My Amstrad PC2086 manual states that my machine has a DIP switch to change between XT and PS2 modes, so will it run Links? Please enlighten me on this subject. I don't mind lack of speed, as I am used to it after two and a half years of an 8Mhz 8086 processor. Also, could you tell me when Magic Pockets is due for

release, as none of my dealers seem quite sure.

Mark Dalloway
Harrogate
N Yorks



US Gold has good and bad news. Links will run on your PC, but so slowly even you may find it a turn-off. Magic Pockets should be out right now.

Better buys?

I draw your attention to machines which seriously undercut the games packages you reviewed in issue 8. Both Olympic and Austin have 40Mb colour VGA equipped 386SX machines selling at under £600 before Vat. The Austin FirstStation is £590 but would need a games port/sound card, I suppose. The Olympic is better value, giving SVGA and 2Mb RAM for £599. Both machines include DOS 5.

Another neat offering is the Multiplex Booksize. The system box is minute, but still manages to pack in a 386SX processor 2MB RAM, 85MB hard disk, 512K SVGA, games port and a single slot (for your games card/SCSI CD ROM port). There is a choice of compact or full-size keyboard. For £795 plus Vat, you also get the 14" colour monitor, DOS 5, Windows 3.1 and anti-virus software as well as a five year maintenance plan.

One way to obtain cheap games is to make use of remaindered stock offers. Catalogues like Misco have three-game bundles for £39.95. Sierra currently has half-price or less offers on non-VGA games which it is discontinuing. Sierra will only supply 256 colour VGA games in future as I expect you know. It could be cheaper to buy the discounted old game and send as a VGA upgrade than to pay for the new VGA version.

I hope this encourages you and your readers to enterprise. May I suggest a monthly challenge to seek out and disseminate the best value? Rather than lamenting the expense of hardware and software, I

am convinced that it is better to do something positive. Of course, when you have found that too-good-to-miss bargain, you have to spoil the dream by working out that you, a) you can't afford it, and, b) it will probably be £150 cheaper elsewhere in six weeks.

Christopher Bridgman
Windsor
Berks

In defence of games

I am writing in because I happen to think that computer-gamers today are much too critical of the market which they claim they enjoy so much: "£40 for a piece of rubbish," said Danny Hui in the last edition of PC Review about Twilight 2000 from Paragon. Let's see him do better! I enjoyed Twilight 2000 tremendously and I think that the people who complain about today's games are the people who sit for half an hour at their machine wiggling their joysticks and get fed up if they can't finish the game on the same day they bought it. All computer games take today is a bit of participation, not super fast auto-fire. It's called gameplay, and people don't really know what that means: they complain if they have to read a manual (at least the game has a manual).

I have been getting more and more fed up by the number of people who open a box, take out the disks, load up the game, and then whinge because they can't figure out what's going on, when there is a glossy-looking, very informative manual lying on the table before them.

A game should need a manual, otherwise it's probably just like all the other shoot-em-ups we play and play all the time, then it isn't worth £40. If people take more time on their games, that "£40 piece of rubbish" becomes £40 worth of computer game. And well worth it too.

Carl Johnson
Tring
Herts

WINNERS

RPG Hall of Fame (Issue 8)

Identifying characters from well-known RPGs didn't pose too many problems, but we had an interesting selection of ideas as to why one of them might be the odd one out. The first correct entry out of the murky depths of the PC Review hat came from **Alex Darby**, of Swansea, proud and extraordinarily lucky winner of an Orion Gamepro-SX PC, complete with SVGA colour monitor, soundboard, headphones, mouse and joystick. Well done, Alex.

The very nearly as lucky runners-up win a copy of Wizardry VI – Bane of the Cosmic Forge to add to their RPG collection: **Robert Harvey**, of Sheringham, Norfolk; **Paul Munnelly**, of Great Barford, Bedford; **A Harding**, of Biggleswade, Beds; **Riza Musanwir**, of London NW11; **John Price**, of Rhyl, Clwyd, and **Andrew Page**, of Radcliffe-on-Trent, Notts.

The answers to the characters were as follows: Picture A was the Beholder; Picture B was the Guardian; Picture C was Gothmenes, and Picture D was the Avatar.

The odd one out was clearly the Avatar, because he is a hero, as opposed to a force of evil within the games concerned. He is also the only one of the characters who is human, and either, or both, of these answers was counted as correct (so long as you picked the Avatar, anyway.)

Strip teaser

I played European Championship 1992 free on your highly popular cover disk.

Upon playing I eventually realised that the demo has the teams the wrong way around. This is based upon the fact that Holland is in orange strips and Sweden in yellow. You presume that Holland score, at the bottom of the screen during the interval and at the end of the game the score displays that Sweden have scored. Confusing?

John Butters
Choppington
Northumberland

Hippos wanted

A little help would be greatly appreciated. I'm desperate to find a game featuring (staring) hippos! It doesn't matter if it's text based PD, or commercial a la Lemmings. If your staff are out of ideas, perhaps one of your readers may know of one (PC only). It's not for me, I hasten to add, I'm heavily into RPGs, but my wife has just started learning the computer and has this thing about hippos (her collection numbers 200-plus).

As an aside, here is a useful tip for your readers. Different programs need different configurations, so I keep a copy of the necessary Config.sys and Autoexec.bat in the relevant programs directory and use a batch file to load them, thus:

```
@ECHO OFF
CD\DIRECTORY
COPY AUTOEXEC.BAT C:\
COPY CONFIG.SYS C:\
COLDBOOT
```

The last line is PD program (COLD-BOOT.COM) which reboots the PC. Lines like the ones below will do as well:

```
: ECHO
ECHO NOW REBOOT (USE ^ ALT DEL
or the RESET BUTTON)
ECHO .
ECHO OR USE ^C TO RETURN TO THE
PROMPT
PAUSE > NUL
GOTO ECHO
```

I came up with this after a PD program to have x Config.sys files open on booting chewed up my hard disk!

Paul Ackerley
St.Helens
Merseyside

We're completely stuck on the hippo front; the only thing we can think of is that there are hippos on the Mammals of the World CD-ROM disc, which isn't much use to you. Over to anyone else who knows better.

ON THE SPOT

PC Review arranges regular visits to the UK's top PC companies, taking with us a selection of readers who have filled in the form below. This gives you the chance to talk to various movers and shakers within the industry: interview them, ask them about their PC plans, how they design, write, produce their games, what they hope to be doing in the future. The exact nature of the visit, and the degree of formality, depends on the companies concerned, but you usually get a chance to see some sneak previews of forthcoming products, meet the programmers, and have a guided tour of company HQ.

A full report of the visit then appears in a later PC Review – useful for those who didn't go, because they'll read the answers to the questions *you* asked. In other words, the issues which you, the readers, care about, rather than we think is important.

We're currently planning our trips to Psygnosis and Mindscape, so if you've already applied, you may be hearing from us soon. If you haven't applied yet, get that form sent in quickly.

If you want to take part in an On the Spot visit, fill in the form below and send it to: On the Spot, PC Review, EMAP Images, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

Note: we don't take very many people at any one time, so that if selected, you'll have every chance to have your say. Because of this, the places get filled quickly, but we'll be doing return visits to all the most popular companies. If you miss out the first time round, sit tight, because another visit to the same place will come up and we don't throw your forms away.

Name.....

Address.....

.....

.....

.....

Daytime tel no:.....

Evening tel no: (leave this blank if you prefer)

Age: Under 16 ☐ 16-25 ☐ 25-40 ☐ Over 40 ☐

NB if you are under 16, please get your parent or guardian to sign this form as well giving their consent for you to take part.

Which company would you like to visit?

Domark ☐ Virgin ☐ Mindscape ☐ Bitmap Brothers ☐

Psygnosis ☐ Other (if applicable)

.....

Any particular reason for your preference(s)?

.....

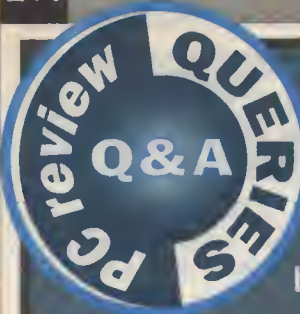
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PC Review September 1992

PC Review welcomes letters on any subject under the PC sun. The editor will chop them to fit if need be, and we'll assume letters are for publication unless you state otherwise. Send all mail to Letters, PC Review, EMAP Images, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. If you have access to CIX (Compulink Information Exchange) you can send your letters to our mailbox – our ID is pcreview. Star Letters win software prizes!



Bemused, bothered or bewildered about the mysterious workings of your PC? Confused by hardware options? Stricken with software seize-ups? Share your problems with Q&A's Mike James and he'll endeavour to help.

Hard disk compression

Q I have an Olivetti 286 with a 40Mb hard disk which is rapidly running out of space. I have seen some software which claims it can double, or in some cases even triple, your hard disk capacity, eg, Superstore, and DR-DOS v6 claims to do it as well. Could you please tell me whether these hard disk packages will work on my computer and which one is best value for money as I'd like to put some games on it like Wing Commander II.

Duncan Bramble
Cheshire

PS How much does Wing Commander II take up anyway?

A Fully installed, Wing Commander II takes 21Mb and with games software growing every month I can understand why you are thinking about disk compression utilities. The way that they work is to use sophisticated data compression methods to cram a quart into a pint pot. The actual size of your disk drive doesn't increase, the space to store the data does. Of course this means that your data is stored in a coded form but the decoding is done without you knowing anything about it. They work, but note that you are unlikely to gain more than 50% back as free space. However, it is still worth it. Also some games already use compression to store images and in this case the gain would be less. It all depends on the type of software and data you have on the disk.

There are a number of horror stories going around concerning users who have lost all their data while installing a compression program, but clearly Microsoft and DR think that it works, because they are now including compression as standard with their respective operating systems. As long as you take care to back up the data on the drive before you install the compression utility then you will be able to recover from any accidents. Remember, you should always back up your hard disk before making any changes to it.

Lost megabytes

Q I'm sitting here going insane. I have an IBM PS/1 286, 30Mb hard disk with a VGA monitor and DOS 4. Several weeks ago I had a considerable number of programs on my hard disk, then I decided to have a clear-up,

deleting all my programs (apart from the programs that were on the hard disk when the system was bought). After this was done I ran Chkdsk and found that 6Mb had gone missing for no apparent reason.

From reading an article in PC Review Issue 6 I discovered that someone was having unwanted files created for them by DOS 4.01. You suggested deleting files with extensions such as .CHK and .TMP, so I deleted these files — the ones I could find — and still no change. What has happened to the lost 6Mb?

Neil Sperrings
Bridgwater
Somerset

A There are a number of reasons why you might have lost 6Mb of a hard disk but the most likely is that a file has gone missing from the directory. It is still on the disk but you can't get at it, delete or re-use the space because it isn't listed in the directory. The solution is to run Chkdsk but with the /f option specified (F for fix). That is, at the MS-DOS command, prompt type

CHKDSK /F

This will again report the missing 6Mb but now it will offer to convert this back into regular files with names ending in .CHK. Without the /f option it still asks you if you want to do it but it doesn't actually do it! After this you can delete the recovered files using

ERASE C:*.CHK

so returning the 6Mb back to the free area of the disk.

If this doesn't work then the only other possibility is that an application has created a 6Mb hidden system file, but given that Chkdsk reports the 6Mb as missing, rather than used by the system, this doesn't seem likely.

Soundproof windows

Q I enjoyed the article on the advantages of Windows in Issue 6, but I have experienced a problem running non-Windows applications under Windows 3.1. In particular, Windows appears to initialise, and thus capture, the sound card which cannot then be used in non-Windows games.

I have a PC Symphony (Ad Lib compatible) card fitted in my 386DX40. Games like Monkey

Island work correctly, with all the right sounds, from the MS-DOS prompt. Likewise, MIDI compatible files running within the Windows program also perform correctly. But the sound card does not work when non-Windows applications are accessed from Windows — help!

Rod Edwards
Warsash
Hants

A I wish I could help, but my own Sound Blaster card works very nicely with Windows 3.1 and with MD-DOS applications running under Windows. I have looked to see if there is anything general about sound cards, but the manuals all

Into overdrive

Q I recently purchased an Apricot Xen-Ls 486SX20 and, due to my use of certain graphics intensive packages, I also bought a maths co-processor, effectively making the machine a full 486DX20.

I have since read about the new Intel CPUs called 'over-drives' which will run at double the motherboard clock speed, ie, 40Mhz, when placed in my currently occupied co-processor slot.

I would be grateful if you could provide any information about them, ie, price, performance, and most importantly, is it a full 486DX chip in its own right as I do need maths co-processor capabilities for my graphics applications? No local suppliers have ever heard of these chips.

G Martin
Kirkcaldy
Forfe

PS In your reply in Issue 8 to Mr Schupfer of Surrey, you stated that a 40Mhz 386DX machine will out-perform a 25Mhz 486SX. This has certainly not been the case in my experience.

A The 486DX2 is a clock doubled version of the full 486. This means that it runs at twice the speed but using the same system clock. For example, a 25Mhz DX2 will execute instructions at the same speed as a 50Mhz DX. However, the overall speed increase isn't double because some of the time in running a program is spent in accessing memory and this occurs at the system clock rate, ie, 25Mhz. Speed gains are estimated to be 30% to 50% rather than 100% but again it is difficult to be exact, because it depends on the ratio of main memory accesses per instruction executed. The 30% figure is what Intel itself suggests as reasonable. At the moment I am not sure of an upgrade price, but I don't think I would recommend you indulge just yet anyway. The reason is that Intel and others are working on a wide range of upgrade CPUs that should see the light of day in the next few months. Wait for prices to fall and for the situation to become clear.

As to your PS, yes I have to admit that by some measurements the 25Mhz 486SX does perform better than a 40Mhz 386DX. For example, the Landmark speed of a 25Mhz 486SX is roughly 100Mhz as compared to 60Mhz for a 40Mhz 386DX but if you choose a different

repeatedly refer any problems to the particular driver and hence the manufacturer. I can only assume that the PC Symphony card driver that works under MS-DOS is incompatible in some way with Windows. Try contacting the dealer to see if there is an update available — sometimes just knowing that it should work can be a little bit of a help!

Faulty memory



I have an IBM PC/AT 80386 and SVGA monitor with 2Mb memory, a Sound Blaster card, both 1.22Mb and 1.44Mb floppy disk drives and an 80Mb hard disk (Seagate). The problem is this:

when I load programs that require a substantial amount of memory, say 1Mb or 2Mb, I find that my computer will either freeze (crash) or display the following message:

SYSTEM HALTED
ON BOARD PARITY ERROR AT ????

However this does not happen as frequently as it used to. Could you please tell me what is happening, or what to do, or who to contact?

Andrew Prangley
Aberdare
South Glamorgan



Nearly all memory systems make use of parity checking to detect memory faults. Each memory location stores eight bits of data and has a ninth added to it as a

guard or parity bit. The parity bit is set to indicate if the number of 1 bits in the data is odd or even. If a change to one of the data bits occurs then the parity bit will be at odds with reality and a parity error message — like the one you report — will occur and the system will halt. It is possible for some memory errors to go undetected because a change in two bits doesn't affect the parity of the data — ie, there are still an odd or even number of 1s in the data after the change. This probably accounts for the machine locking up without an error message some of the time. The important part of the message is the AT ????. The question marks are replaced by the location of the memory that is giving the trouble. In principle, all you have to do is discover which memory chip this corresponds to and change it. In practice, this can be difficult without a very complete manual and a little knowledge concerning how memory locations are reported.

If you want to try solving the problem on your own then you need a memory diagnostic program — there are a number available as shareware — and patience. You could try getting it repaired but in most cases replacing the entire memory with new chips would be cheaper!

Sound potential



I own a 25Mhz PC with 2Mb Ram. I am thinking of getting a Sound Blaster V2.0 and would like answers to these questions:

1) My PC comes with a 15-pin analogue port, Sound Blaster also comes with one. Can I use both for two-player games?

2) Would I be able to get speech and/or music on Wing Commander 2?

3) If there were no cinematic displays or atmospheric music in WC2 would you still think it is an 'essential buy'?

Nathan Power
Ireland



The answers are: 1) No, because you can only have one analogue port fitted at a time. You either have to remove the existing port or disable the Sound Blaster

port, which is easy enough to do. You shouldn't need two ports because a single port will support two complete joysticks — all you need is a splitter cable. 2) Probably. You need to make sure that the 2Mb is correctly configured as expanded memory and that there is 583K of conventional memory free. If you are using MS-DOS 5 this should be no problem. Also note that it needs 21Mb of hard disk space. 3) Personally speaking, yes!

In search of Tracey



I have heard of typewriters that cost £90 and they make a noise whenever you type in a incorrectly spelt word. What is the cheapest PC equivalent to this type of word processing? Also, I

know that there is a tracing tool that is to be attached to mice called 'Tracey'. How much does this cost and where can I get this useful peripheral?

Thomas Cole
Woodford Green
Essex



Nearly all word processors these days come with a spelling package that can be used to check that everything in a document is correct. Some can

even be set so that they check words as you type but in practice this is a terrible idea. There is nothing worse than being interrupted while you are typing! It is much more efficient to type the text and then perform a spell check as a separate operation. Most word processor spelling packages do, however, let you check just the current word — which is handy for those situations in which you are uncertain about a word's spelling.

Tracey is a small plastic crosshair that can be clipped to any mouse using Velcro. Using it you can trace line art by keeping the cross hair on track. It is available from Sidewise Ltd, at PO Box 4, Totnes, Devon, TQ9 7EN, and costs £7.99. Personally, I've been making my own from Blutack and sticky-back plastic, Blue Peter style for years — much cheaper and you don't have to worry when you lose it!

Don't forget: if you have any answers or ideas to help other PC Review readers, drop us a line and we will publish them. Send your letters to Q&A, PC Review, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. If you have access to CIX, the Compulink Information Exchange, you can send your query to us there — our ID is pcreview.

measure — MIPS say — they are about equal. It depends on the nature of the measurement and how you define power. The 486 executes any instructions in half the time that the 386 takes but at 25MHz it takes almost twice as long to access memory as the 40MHz 386DX.

There are also other considerations that affect the speed of a machine other than just the CPU type such as cache size and type, memory technology, etc. After the reflection that your comment prompted I think I did go too far in saying that the 40Mhz 386DX was actually faster in all cases! It would be fairer to say that if you gave me a choice between the two I would be interested in finer points of design and cost before I decided between them.

Cash for cache



I recently read an advertisement for a 486Dx 33MHz computer with SVGA and all the other 'trimmings' (Windows 3, 4Mb RAM, DOS 5.0 etc). I then read an advert from the same company for the same computer with the same specifications made by the same component manufacturers, but with a 256K cache. I was amazed to find that it was nearly £300 more expensive.

As the 486DX chip in question already has an 8K on-board cache is the extra cache (and cash) really necessary?

Matthew Davis
Croydon
Surrey



The 8K on-chip cache is a little on the small side to deliver all of the power that the 486DX has locked away inside it and an extra chunk of cache does speed things up. Now you're

going to want me to stick my neck out and tell you by how much. The answer is difficult because the effect of a cache depends on the type of program you are running — but it should be at least 10% to 20% faster. Personally I would go for the larger cache but this is mainly because I regard it as almost standard rather than because it is a must. I am worried that you think it costs a whole £300 more for a 256K cache. A quick survey of prices revealed a price difference of only £100 or so in going from a 64K cache to a 256K cache and I was hard pressed to find a 486 that didn't have an additional cache included in the basic price. So either you have found an exceptional bargain on an old non-externally cached 486 or you should shop around a little more.

Dial-a-pet

The subject of computer 'porn' periodically raises its head to general rumbles of disapproval all round. In the UK, the use of a PC to produce grainy, blurred images is a shady, under the counter business, with participants protesting ignorance, innocence and a "not-me-guv" attitude if challenged. The Americans, of course, are much more upfront. With a VGA card, mouse and modem you can download Penthouse magazine, complete with "special guests" — whatever that means. However, in true British fashion, Quit is not going to give out the number.

Blind dog for the Guides

Way back in Issue 3, we launched a somewhat ambitious scheme to collect enough stamps from letters received at PC Review to buy a Guide Dog. Not for us, you understand, but in conjunction with Guide Dogs for the Blind. At the time, it was boldly predicted that we could have our dog complete by this summer.

Well, the stamps are still coming in, and being collected, but we're still only about two thirds of the way there (we're talking *large* guide dog, right). Anyway, it certainly hasn't been forgotten, keep those stamps coming in, and, erm, if anyone feels like coming in and helping us tear stamps off envelopes, just call the normal telephone number.

From small to wide screen

With the increasing use of 'real' actors in digitised form in PC games, and the computer game adaptation from the movie an established — if not always very successful —

Bribery and corruption

As I'm sure you're aware, computer magazine journalists have a tough life. It's an endless round of freebies, Caribbean holidays for two in exchange for a good review, nights out on the town courtesy of Bloggsoft, etc, etc.

But the most blatant piece of attempted corruption must be the latest campaign to buy our favours from Entertainment International, the company behind the Empire label. A big, excitingly lumpy parcel arrived by special delivery at the PC Review offices. Inside were a small pair of plastic binoculars, a similarly plastic magnifying glass and a packet of Chewits (mint flavour). Empire is about to launch the game Guy Spy. In light of this, we can make head and tail of the binoculars and magnifier, but we're still at a loss to know where the Chewits come in.



genre, PC Review has been musing on the subject of which stars would be best equipped to play their VGA screen equivalents. Burt Reynolds would certainly make a plausible Mario Brother and how about Michael J Fox as Guybrush Threepwood (Monkey Island), or — a particularly inspired piece of casting — Woody Allen as Leisure Suit Larry? Software publishers are surely talking to West Coast agents even as we speak.

Quit to quit

If you read this magazine in normal fashion, from front to back, you'll have already seen on page 96 that from next month PC Review will be bigger, brighter and better, with a rather swish new look. If you read magazines from back to front, then Quit can exclusively reveal to you that from next month, PC Review will be bigger, brighter and better, with a rather swish new look.

In keeping with our stringent policy of improving editorial quality all round, Quit is going to do exactly that.

Caption competition results

I don't know why we stipulated that suggested captions had to be printable — it only inspired you to depths beyond our imagination (and could the entrant who began his letter, "After flicking through PC Review ..." please take more care with his handwriting in future?). Monstrous carbuncles, Andrew Morton and (for some reason which utterly escapes us), Belgium featured strongly in the suggestions. After much deliberation by our esteemed judging panel, we have named Robert Jones, of Mold, Clwyd, as the winner for his least unfunny caption, right. A piece of software to match the quality of this inspiration is on its way.



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"...for many recent releases a 386 PC is a minimum requirement." *PC Format '92*

It is a simple fact of computing that the more information you try to process the slower everything becomes. Not much fun when the subject is Gunship 2000 in glorious 256 colour graphics. Try playing the latest generation simulations on a 286 for example. The graphics are very 'jerky' and the response is frustratingly slow. The effect is unconvincing and not worthy of simulator status.

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| "Zy-Fi" Stereo Speakers with Internal Amp. | 35-00 | 30-00 |
| Soundblaster v.2 | 110-00 | 60-00 |
| Soundblaster PRO (+MIDI Interface) | 179-00 | 130-00 |
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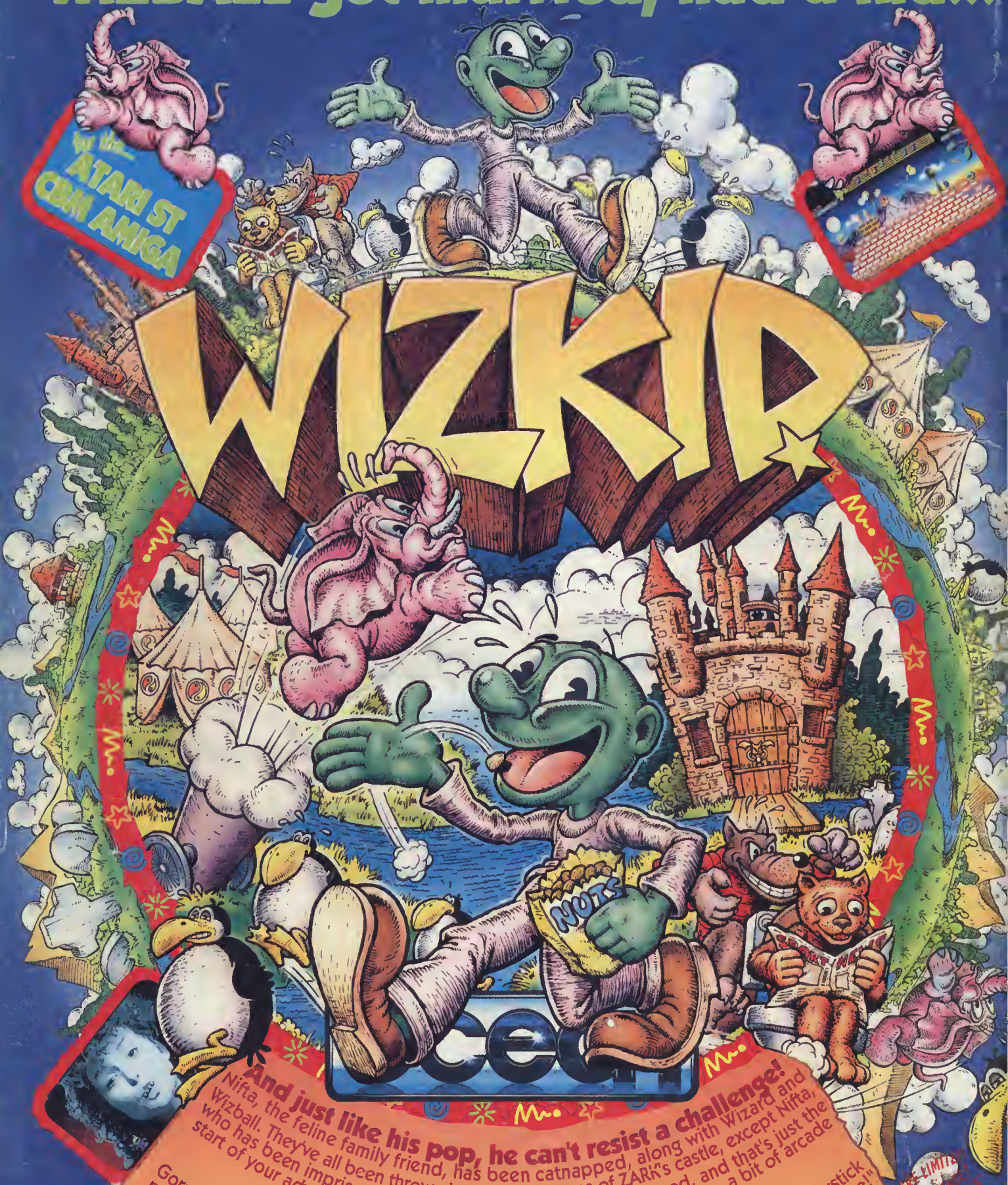
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WIZBALL got married, had a kid...



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